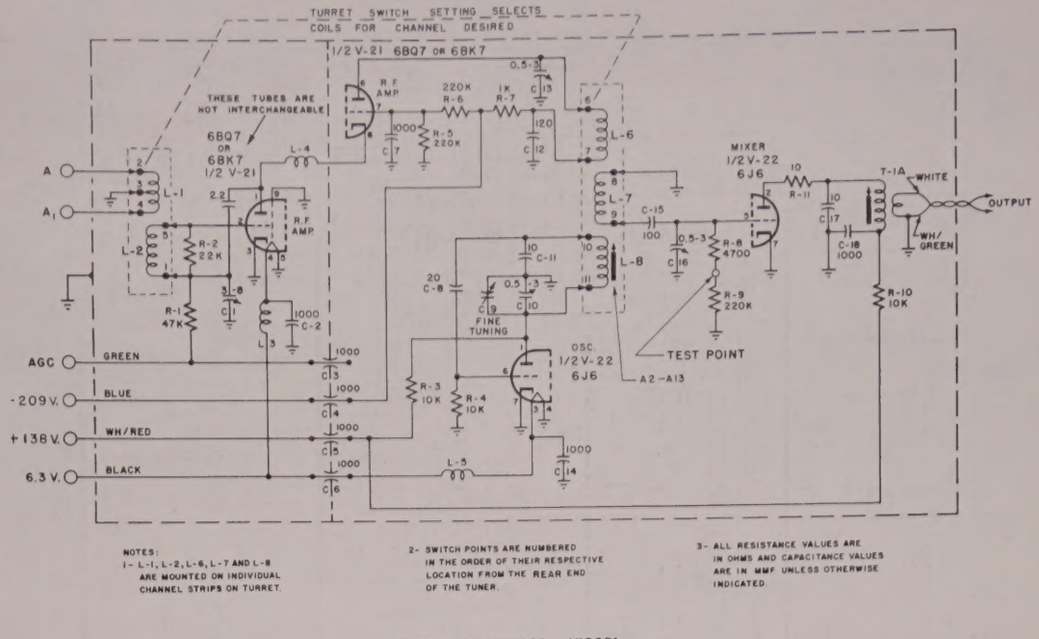
CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Bell Sound	2145, A	161-2
Coronado	15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A Tel. Rec.	161-3
Emerson	709A (Ch. 120162-A) Tel. Rec.	161-1A
General Electric	16K1, 16K2 Tel. Rec.	161-1A
Magnavox	104 Series (Ch. CT301 thru CT314) Tel. Rec.	161-4
Meissner	8BT	161-5
Packard Bell	2311, 2811A Tel. Rec.	161-6
Philco	52-643	161-7
Silvertone	25, 27 (Ch. 478.238)	161-8
Silvertone	102A (Ch. 549.100-3, -7), 168-16 (Ch. 549-100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6) Tel. Rec.	161-9
Truetone	2D1091, 2D2043A, 2D2047B Tel. Rec.	161-10
Westinghouse	H-355T5, H-356T5 (Ch. V-2157-5)	161-11
Westinghouse	H-357C10 (Ch. V-2180-5)	161-12



NOTES:
1- L-1, L-2, L-6, L-7 AND L-8 ARE MOUNTED ON INDIVIDUAL CHANNEL STRIPS ON TURRET.

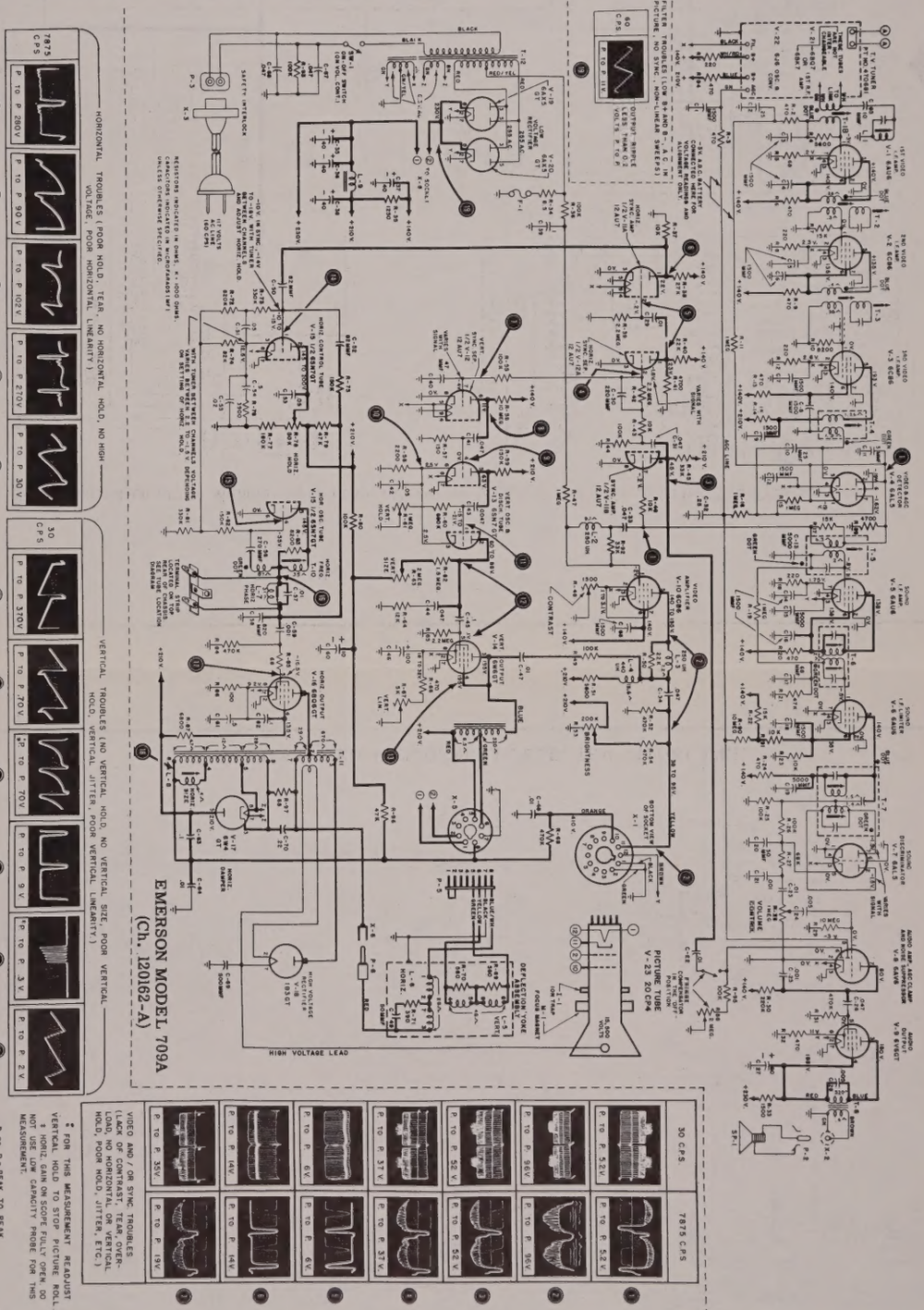
2- SWITCH POINTS ARE NUMBERED IN THE ORDER OF THEIR RESPECTIVE LOCATION FROM THE REAR END OF THE TUNER.

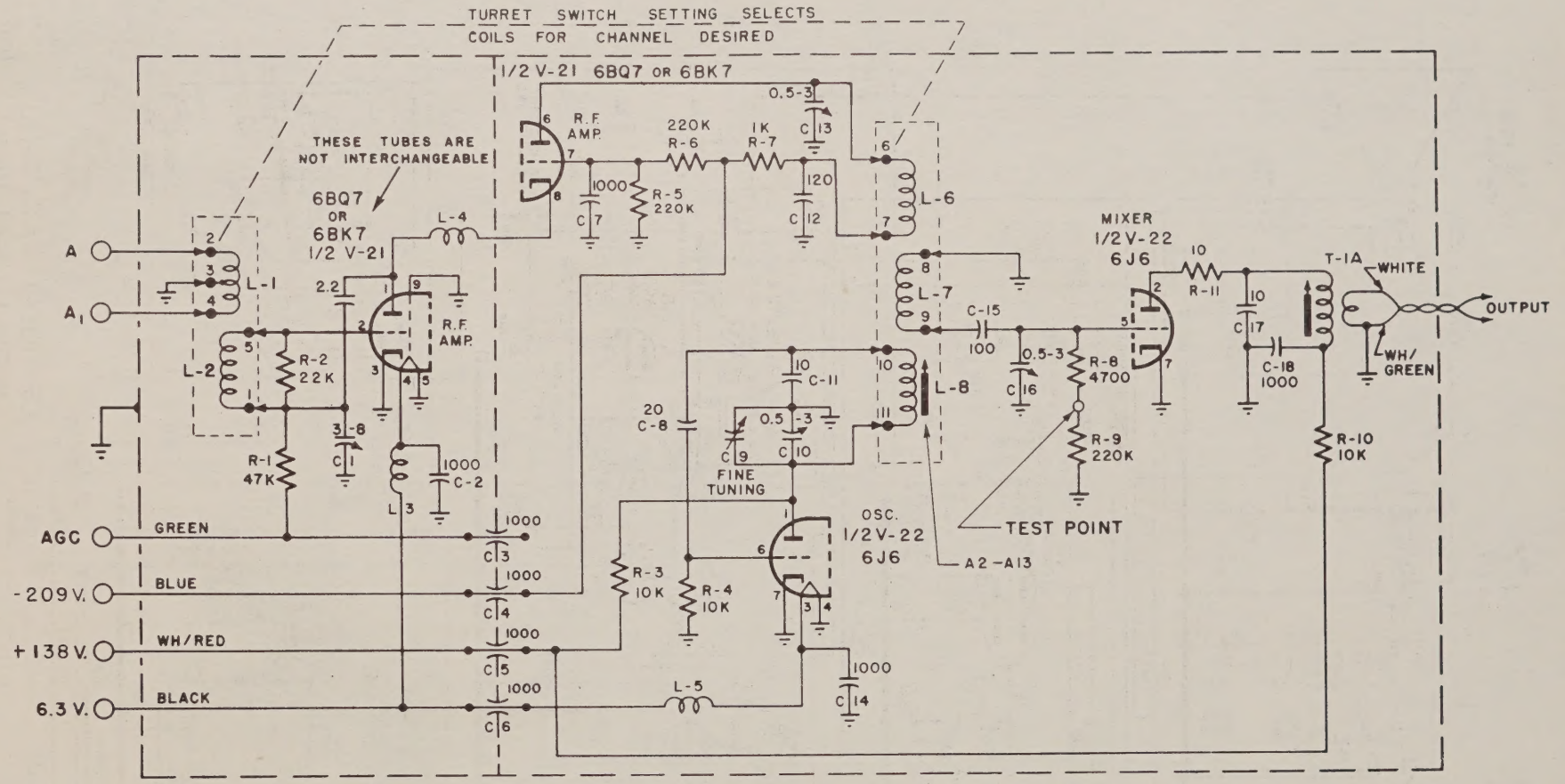
3- ALL RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MMF UNLESS OTHERWISE INDICATED.

TUNER PART NO. 470681

SCHEMATIC DIAGRAM OF TURRET TYPE TUNER #470681 USED ON CHASSIS 120162-A

The Cooperation of the Manufacturer of this Receiver Makes it Possible to Bring You This Service.


EMERSON MODEL 709A
(Ch. 120162-A)
HIGH VOLTAGE LEAD
PICTURE TUBE V-23 20CP4
HORIZONTAL TROUBLES (POOR HOLD, TEAR, NO HORIZONTAL HOLD, NO HIGH VOLTAGE, POOR HORIZONTAL LINEARITY)
VERTICAL TROUBLES (NO VERTICAL HOLD, NO VERTICAL SIZE, POOR VERTICAL HOLD, VERTICAL JITTER, POOR VERTICAL LINEARITY)
VIDEO AND / OR SYNC TROUBLES (LACK OF CONTRAST, TEAR, OVERLOAD, NO HORIZONTAL OR VERTICAL HOLD, POOR HOLD, JITTER, ETC.)
30 CPS
7875 CPS
P TO P = PEAK TO PEAK
* FOR THIS MEASUREMENT READJUST VERTICAL HOLD TO STOP PICTURE ROLL. HORIZ. GAIN ON STOP FULLY OPEN. DO NOT USE LOW CAPACITY PROBE FOR THIS MEASUREMENT.



NOTES:

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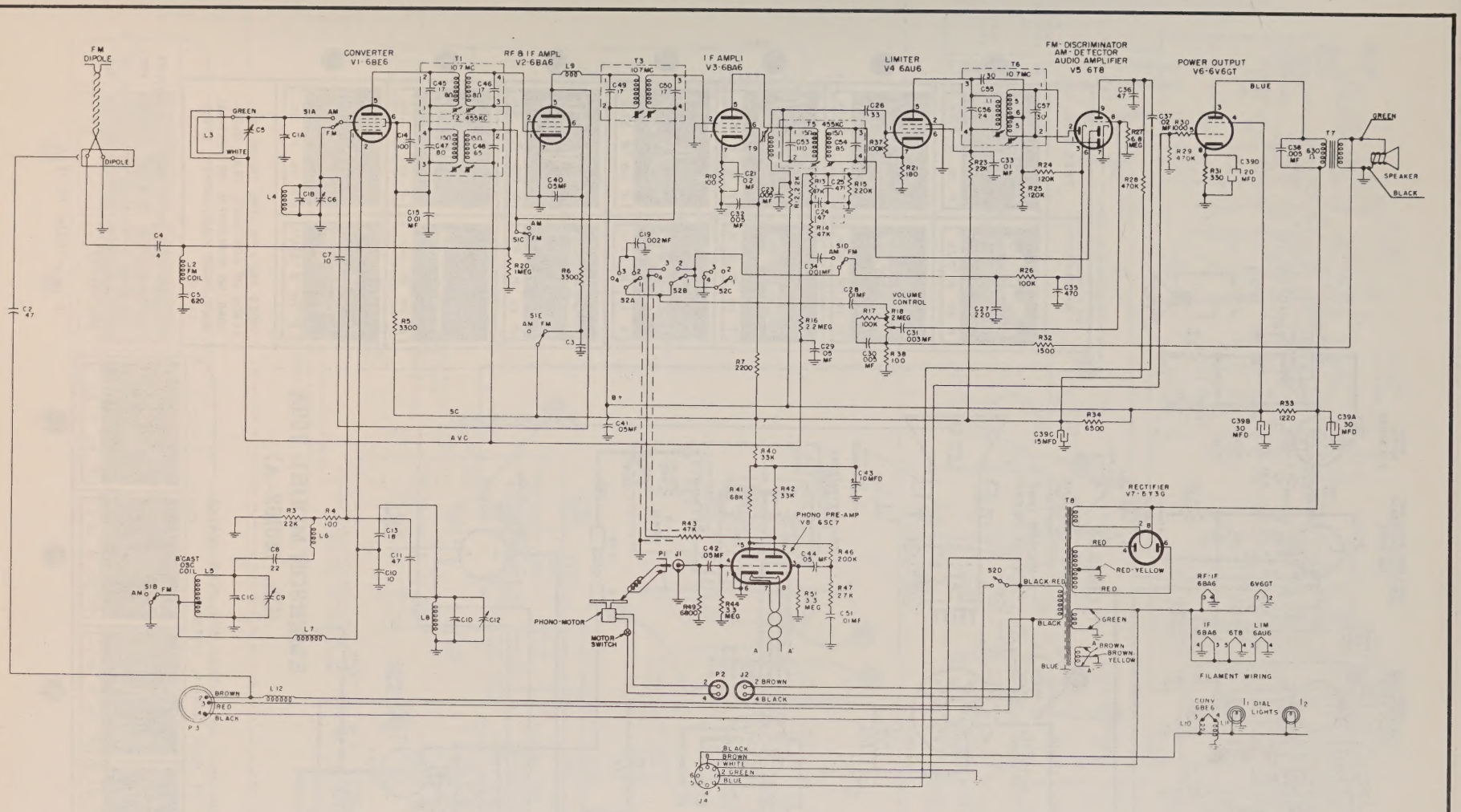
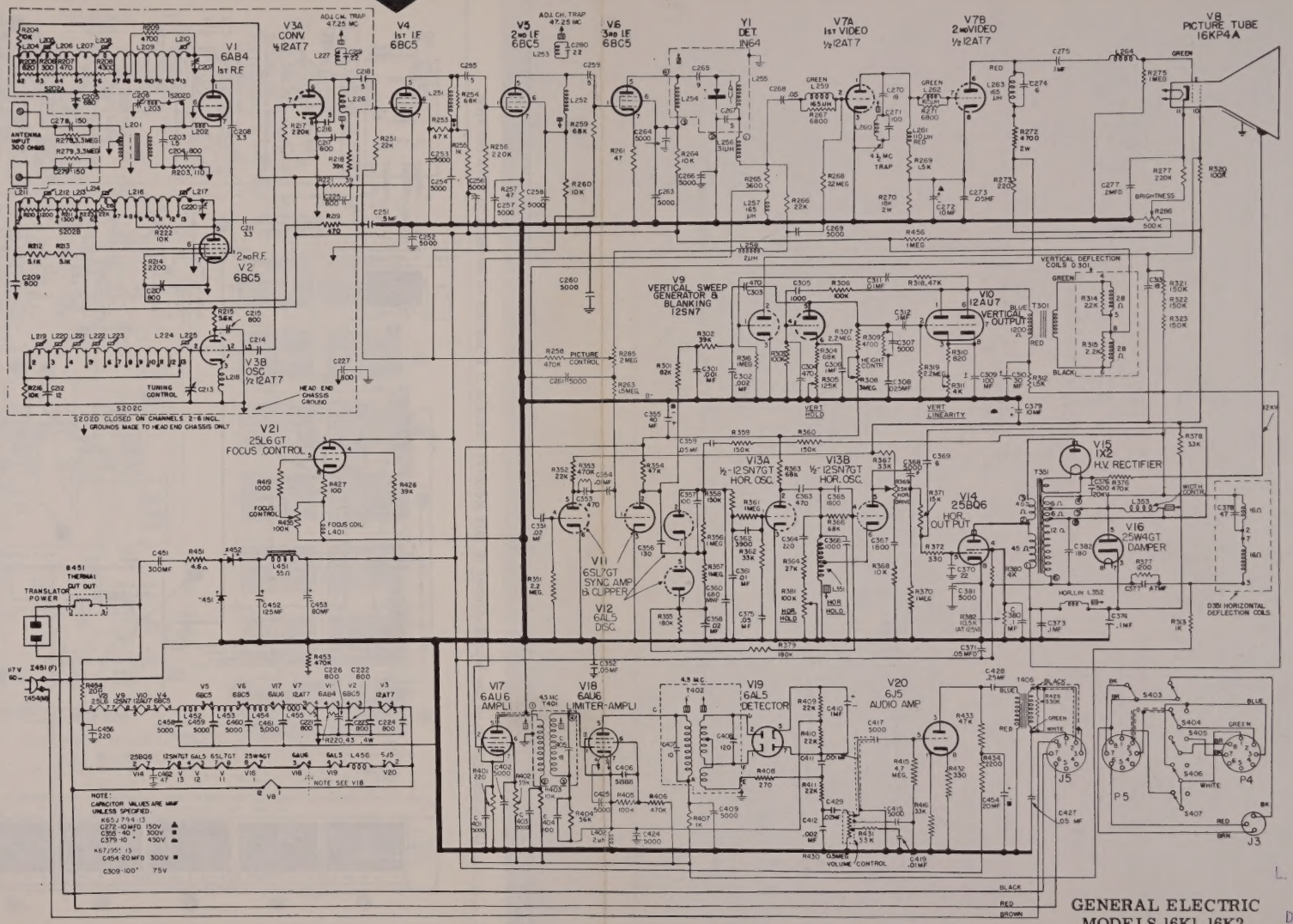
TUNER PART NO. 470681

SCHEMATIC DIAGRAM OF TURRET TYPE TUNER #470681 USED ON CHASSIS 120162-A



RADIO CHASSIS USED WITH GENERAL ELECTRIC MODEL 16K1.



The Cooperation of the Manufacturer of this Receiver Makes it Possible to Bring You This Service.

GENERAL ELECTRIC
MODELS 16K1, 16K2

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PRELIMINARY DATA
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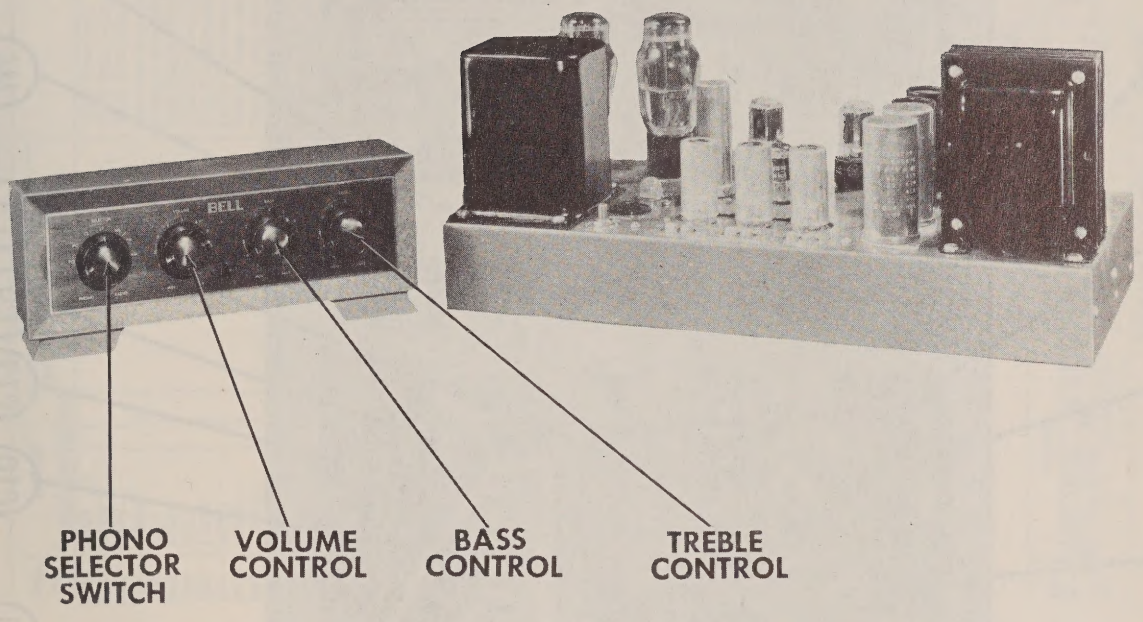
BELL SOUND
MODELS 2145, A



BELL SOUND
MODELS 2145, A

TRADE NAME	Bell Sound Model 2145, A
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Rd., Columbus, Ohio
TYPE SET	AC Operated Six Channel Audio Amplifier
TUBES (ELEVEN)	Types 12AX7 Low Input Pre-Amp., 12AU7 Low Input AF Amp., 12AU7 Hi Input Pre-Amp., 12AX7 Bass Tone Amp., 12AU7 Treble Tone Amp., 12AX7 AF Amp. -Cathode Follower, 6SN7GTA Phase Inv., 6SN7GTA AF Driver, (2) 6B4G Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC — RATING 1.2Amp. @ 117 Volts AC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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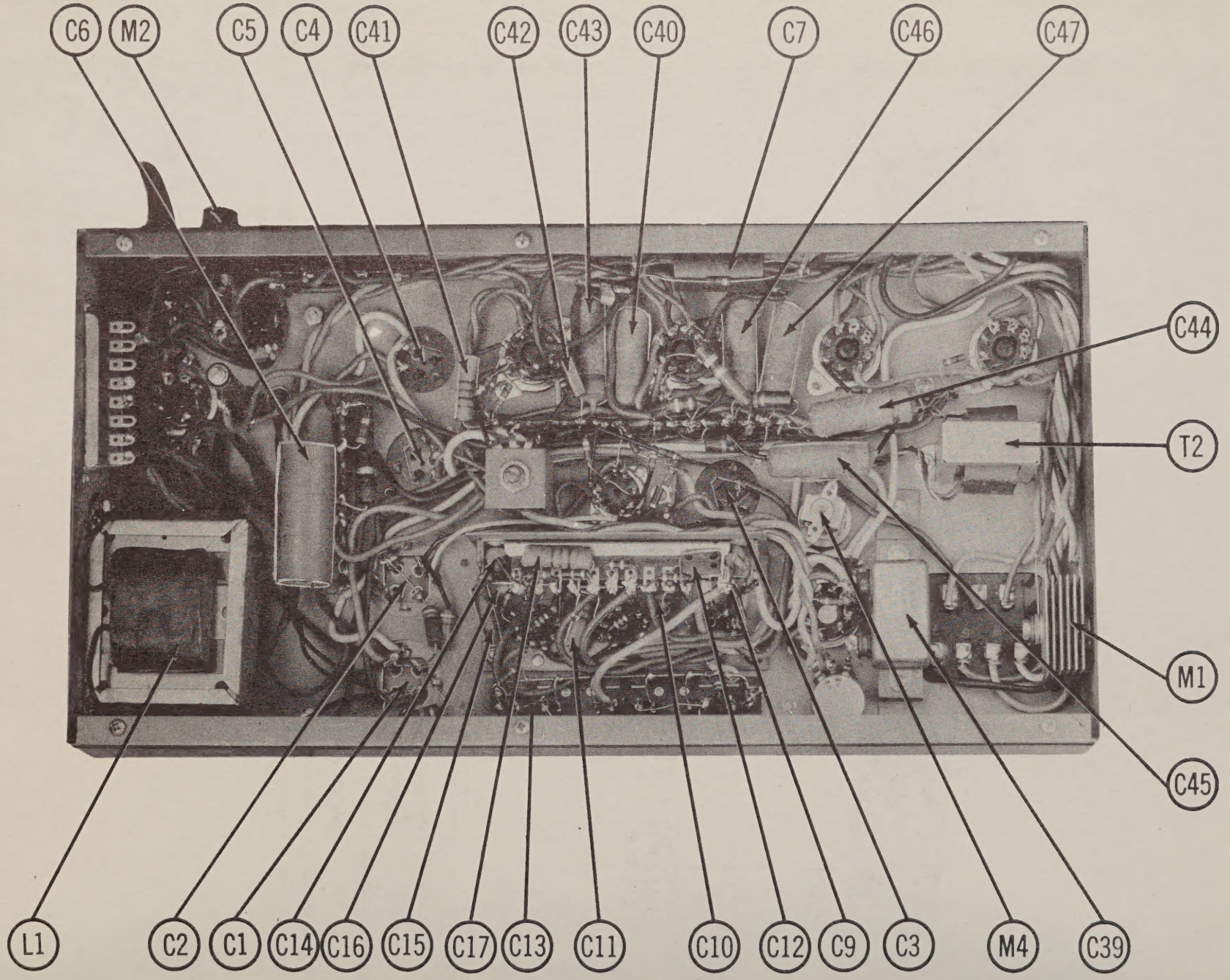
C6
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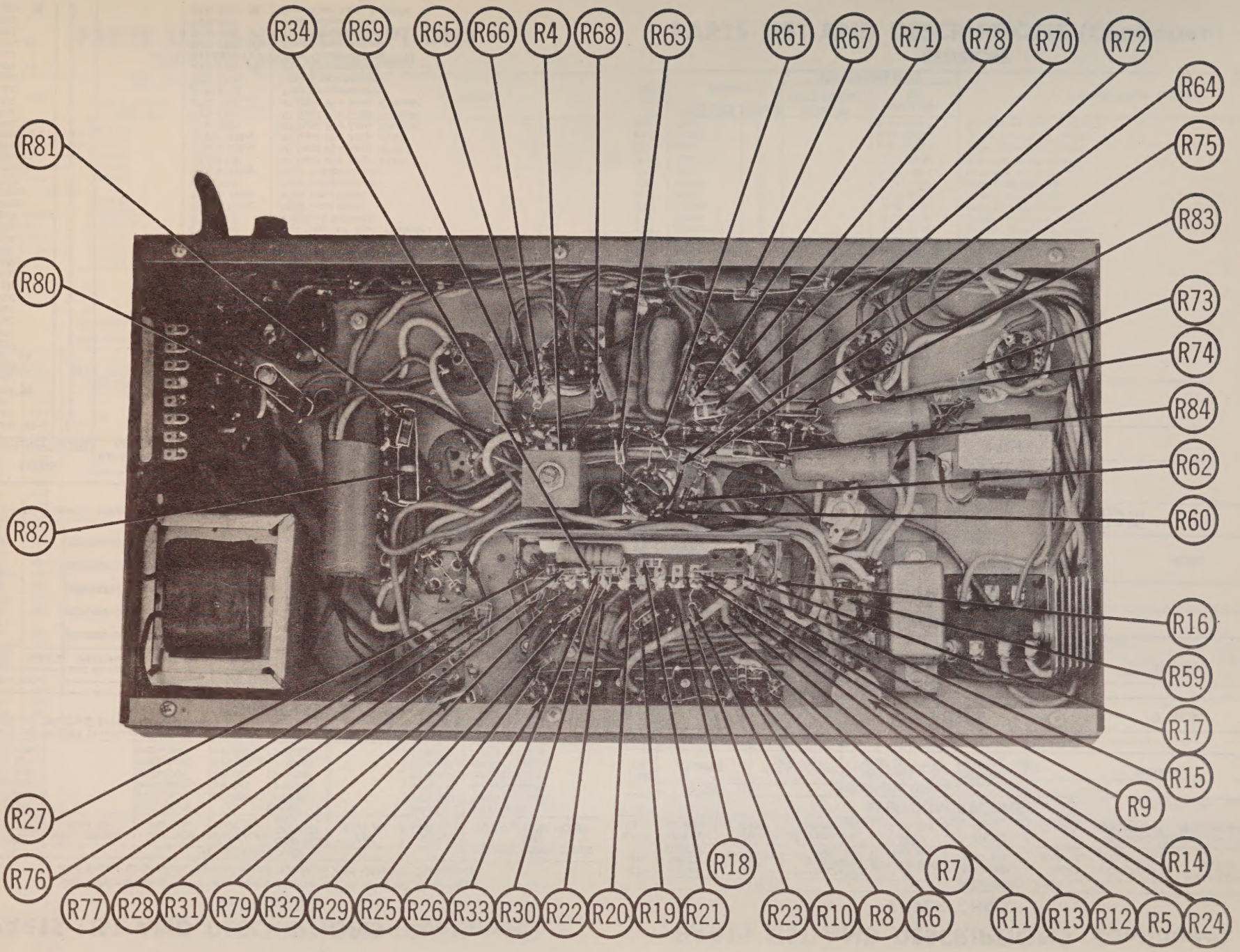
C5
C4
C41
C42
C43
C40
C7
C46
C47
C44
T2
M1
C45
L1
C2
C1
C14
C16
C15
C17
C13
C11
C10
C12
C9
C3
M4
C39


R34
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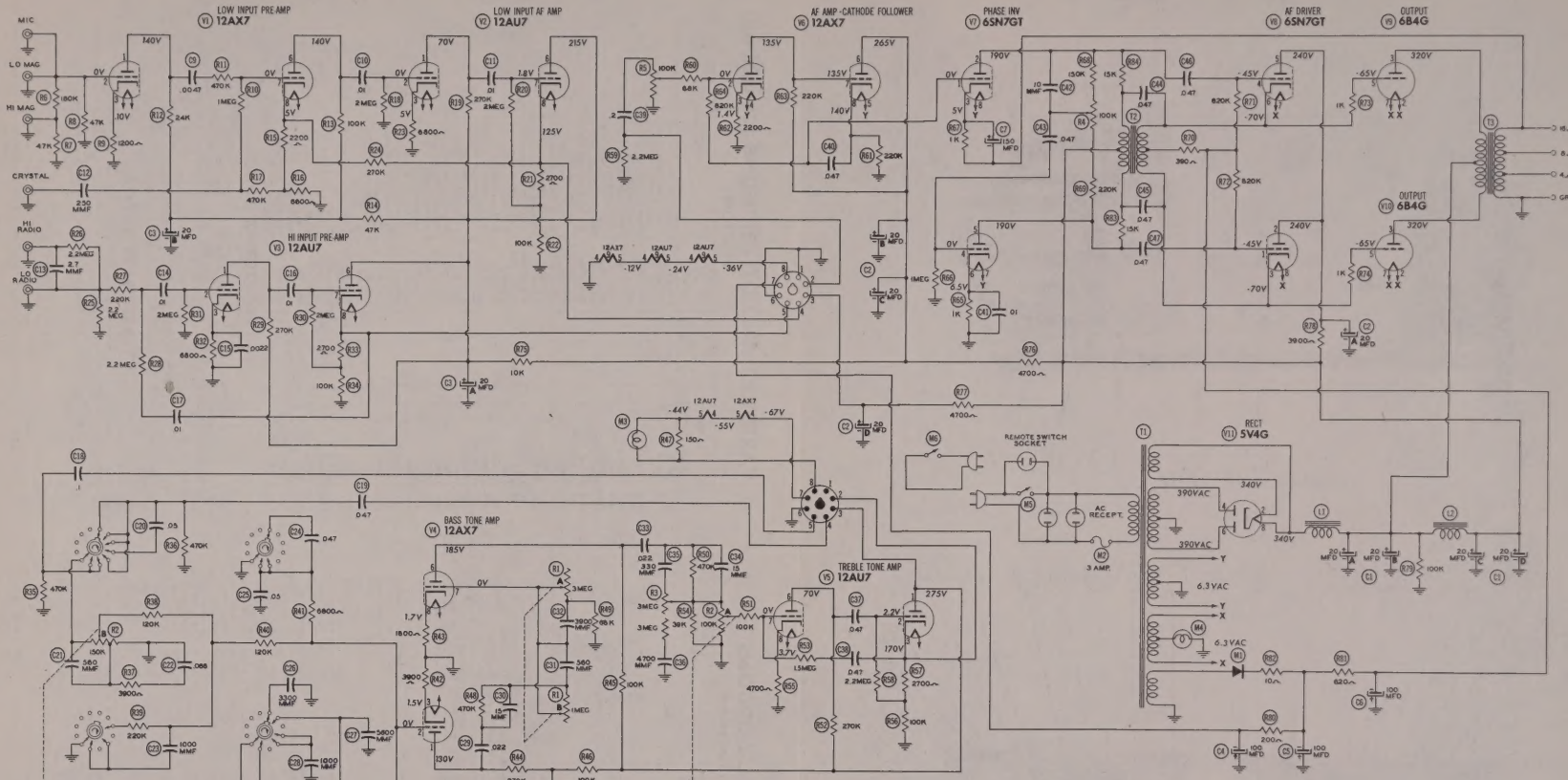

FUNCTION SELECTOR SWITCH SHOWN IN "FOREIGN RECORDS" POSITION.
FUNCTION SELECTOR SWITCH SEQUENCE:
1. FOREIGN RECORDS - FO
2. POPULAR RECORDS - PO
3. CLASSICAL RECORDS - CL
4. LONG PLAY RECORDS - LP
5. NOISE SUPPRESSION - NS
6. RADIO (FM) - FM
7. RADIO (AM) - AM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	166KΩ	41KΩ	1.2KΩ	0Ω	12Ω	165KΩ	1.5Meg	9KΩ	6Ω
V 2	12AU7	120KΩ	2.2Meg	6.9KΩ	12Ω	24Ω	115KΩ	2.2Meg	100KΩ	18Ω
V 3	12AU7	115KΩ	2.2Meg	100KΩ	24Ω	38Ω	120KΩ	2.2Meg	6.8KΩ	30Ω
V 4	12AX7	137KΩ	6.8KΩ	3.9KΩ	67Ω	55Ω	110KΩ	68KΩ	1.6KΩ	6Ω
V 5	12AU7	15.3KΩ	2.5Meg	100KΩ	55Ω	64Ω	127.5KΩ	100KΩ	4.7KΩ	48Ω
V 6	12AX7	122.5KΩ	68KΩ	2.2KΩ	40Ω	60Ω	15.3KΩ	122.5KΩ	220KΩ	6.1Ω
V 7	6SN7GTA	890KΩ	116KΩ	1KΩ	1Meg	116KΩ	1KΩ	6.1Ω	40Ω	
V 8	6SN7GTA	*820KΩ	14.5KΩ	*2.4KΩ	*820KΩ	14.5KΩ	*2.4KΩ	7.1Ω	90Ω	
V 9	6B4G	INF	90Ω	1240Ω	INF	*2.4KΩ	INF	7.1Ω	INF	
V 10	6B4G	INF	7.1Ω	1240Ω	INF	*2.4KΩ	INF	90Ω	INF	
V 11	5V4G	INF	20KΩ	INF	75Ω	INF	71Ω	INF	20KΩ	

ALL MEASUREMENTS TAKEN IN AM POSITION
† MEASURED FROM PIN 8 OF V11
¶ MEASURED FROM PIN 2 OF V9
# MEASURED FROM PIN 8 OF V3
* MEASURED FROM OUTPUT OF M1

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Low Input Pre Amp.	12AX7	12AX7	9A	
V2	Low Input AF. Amp.	12AU7	12AU7	9A	
V3	Hi Input Pre Amp.	12AU7	12AU7	9A	
V4	Bass Tone Amp.	12AX7	12AX7	9A	
V5	Treble Tone Amp.	12AU7	12AU7	9A	
V6	AF Amp. -Cathode Follower	12AX7	12AX7	9A	
V7	Phase Inverter	6SN7GTA	6SN7GTA	8BD	
V8	AF Driver	6SN7GTA	6SN7GTA	8BD	
V9	Audio Output	6B4G	6B4G	5S	
V10	Audio Output	6B4G	6B4G	5S	
V11	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AFH4-14		UP222245		TVL-4763	▲ Filter
B	20	450							Filter
C	20	450							■ Filter
D	20	450							▲ Filter
C2A	20	450		AFH4-14		UP222245		TVL-4763	▲ Decoupling
B	20	450							■ Decoupling
C	20	450							Decoupling
D	20	450							▲ Decoupling
C3A	20	450		AFH2-51		UP2245		TVL-2755	■ Decoupling
B	20	450							▲ Decoupling
C4	100	150		AFH1-21		UP10015		R1085	Bias Filter
C5	100	150		AFH1-21		UP10015		R1085	Bias Filter
C6	100	150		PRS150/100		BR10015		TVA-1420	Bias Filter
C7	150	15		PRS15/100		BRH5015			Phase Inv. Cathode
C8	20	450		PRS450/20		BR2045A		TVA-1709	Decoupling
C9	.0047	400		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C10	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C11	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C12	250	500		1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Audio Coupling †
C13	2.7						NP0K-2R7		Tone Comp.
C14	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C15	.0022	400		P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	HI-Input PreAmp. Cath
C16	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C17	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AF Feedback
C18	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C19	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C20	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.
C21	560	500						MS-36	Tone Comp.
C22	.068	400		P488-068				4TM-S68	Tone Comp.
C23	1000	500		1464-001		1R5D1		MS-21	Tone Comp.
C24	.047	200		P288-047	DF-503	P488-05		2TM-S47	Tone Comp.
C25	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.
C26	3300	500							Tone Comp.
C27	5600	500		1464-006				MS-26	Tone Comp.
C28	10000	500				1D3S1		MS-11	Tone Comp.
C29	.022	400		P488-022	DF-203	PTE4S2		4TM-S22	Audio Coupling
C30	15	500						MS-415	Tone Comp.
C31	560	500						MS-36	Tone Comp.
C32	3900	500		1464-004		1DR5D4			Tone Comp.
C33	.022	400		P488-022	DF-203	PTE4S2		4TM-S22	Audio Coupling
C34	15	500						MS-415	Tone Comp.
C35	330	500		1469-00035					Tone Comp.
C36	4700	500		1464-005		1DR5D5		MS-25	Tone Comp.
C37	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C38	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C39	.2	1000		1030M-.25		MYR10020		BP-256	Audio Coupling ¶
C40	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C41	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Phase Inv. Cathode

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R43	1800Ω	1/2		BTS-1800	Bass Tone Amp. Cathode
R44	270KΩ	1/2		BTS-270K	Bass Tone Amp. Plate
R45	100KΩ	1/2		BTS-100K	Bass Tone Amp. Plate
R46	100KΩ	1/2		BTS-100K	Bass tone amp. plate
R47	150Ω	1		BTA-150	Filament Dropping
R48	470KΩ	1/2		BTS-470K	Tone Compensation
R49	68KΩ	1/2		BTS-68K	Tone Compensation
R50	470KΩ	1/2		BTS-470K	Tone Compensation
R51	100KΩ	1/2		BTS-100K	Treble Tone amp. grid
R52	270KΩ	1/2		BTS-270K	Treble Tone amp. plate
R53	1.3Meg	1/2		BTS-1.3Meg	Tone Compensation
R54	39KΩ 5%	1/2		BTS-39K 5%	Volume Control Shunt
R55	4700Ω	1/2		BTS-4700	Treble Tone Amp. Cathode
R56	100KΩ	1/2		BTS-100K	Treble Tone Amp. Cathode
R57	2700Ω	1/2		BTS-2700	Treble Tone Amp. Cathode
R58	2.2Meg	1/2		BTS-2.2Meg	Treble Tone Amp. Grid
R59	2.2Meg	1/2		BTS-2.2Meg	Tone Compensation
R60	68KΩ	1/2		BTS-68K	Tone Compensation
R61	220KΩ	1/2		BTS-220K	AF Amp. Cathode
R62	2200Ω	1/2		BTS-2200	Cathode Follower Cathode
R63	220KΩ	1/2		BTS-220K	Cathode Follower Plate
R64	820KΩ	1/2		BTS-820K	Tone Compensation
R65	1KΩ	1/2		BTS-1K	Phase Inverter Cathode
R66	1Meg	1/2		BTS-1Meg	Phase Inverter Grid
R67	1KΩ	1/2		BTS-1K	Phase Inverter Cathode
R68	150KΩ	1/2		BTS-150K	Voltage Divider
R69	220KΩ	1/2		BTS-220K	Voltage Divider
R70	390Ω	1		BTA-390	AF Driver Cathode
R71	820KΩ	1/2		BTS-820K	AF Driver Grid
R72	820KΩ	1/2		BTS-820K	AF Driver Grid
R73	1KΩ	1/2		BTS-1K	AF Output Grid
R74	1 KΩ	1/2		BTS-1K	AF Output Grid
R75	10KΩ	1/2		BTS-10K	Filter
R76	4700Ω	1		BTA-4700	Filter
R77	4700Ω	1		BTA-4700	Filter
R78	3900Ω	2		BTB-3900	Filter
R79	100KΩ	2		BTB-100K	Bleeder
R80	200Ω	10		1 3/4A-200	Filter
R81	620Ω	1/2		BTS-620	Bias Network
R82	10Ω	2			Surge Limiter
R83	15KΩ 5%	1		BTA-15K	Phase Inverter Plate
R84	15KΩ 5%	1		BTA-15K	Phase Inverter Plate

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @1.2A	770VCT .140ADC	92VAC .160ADC	5VAC @2A	B-20206			
			SEC. 4	SEC. 5				
			6.3VCT @1.2A	6.3VCT @3.5A				

TRANSFORMER (DRIVER)

ITEM No.	RATING: TURNS RATIO PRI. TO SEC.		RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	1	1	2.2KΩ C.T.	2KΩ C.T.	B-20211		A-2913 ②		② Drill New Mounting Holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T3	3.7KΩ C.T.	4Ω 8Ω 16Ω	300Ω C.T.	.5Ω .6Ω .7Ω	B-20205A		A-3100②	PS0-80	② Drill New Mounting Holes

SET 161 FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C42	10	500		1469-00001		5R5Q1		MS-41	Tone Comp.
C43	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C44	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C45	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C46	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling
C47	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Audio Coupling

† Some Models use 270MMF in this application
¶ Some Models use .25MFD@ 600V in this application

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Bell Sound PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	3Meg	½	B20066P93			SBE-696	Bass Control - Panel
B	1Meg						Bass Control - Rear
R2A	100KΩ	½	B20066P101			SBBT-655	Volume Control Panel
B	150KΩ						Volume Control - Rear
R3A	3Meg	½	B20066P94			SB-229	Treble Control - See Note
	3Meg						
R4A	100KΩ	½	B20066P100	Q11-128	AG-49-S	AN-40	Phase Converter Adjustment
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions.
R5A	100KΩ	½	B20066P99	Q13-128	AG-51-S	AN-41	Master Gain Control
B	Shaft			Not Req.	RS-2	AK-1	Attach to R5A per instructions.

Note- This control is open at center -3Meg from either side to center.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELL SOUND PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARF ± UNLESS OTHERWISE NOTED
R6	180KΩ 5%	½		BTS-180K 5%	Mike Input Shunt
R7	47KΩ			BTS-47K	Mike Input Shunt
R8	47KΩ			BTS-47K	Low Input Pre Amp. Grid
R9	1200Ω 5%			BTS-1200 5%	Low Input Pre Amp. Cathode
R10	1Meg			BTS-1Meg	Low Input Pre Amp. Grid
R11	470KΩ			BTS-470K	Tone Compensation
R12	24KΩ 5%			BTS-24K 5%	Low Input Pre Amp. Plate
R13	100KΩ			BTS-100K	Low Input Pre Amp. Plate
R14	47KΩ			BTS-47K	Decoupling
R15	2200Ω			BTS-2200	Low Input Pre Amp. Cathode
R16	6800Ω			BTS-6800	Low Input Pre Amp. Cathode
R17	470KΩ			BTS-470K	Voltage Divider
R18	2.2Meg			BTS-2.2Meg	Low Input AF Amp. Grid
R19	270KΩ			BTS-270K	Low Input AF Amp. Plate
R20	2.2Meg			BTS-2.2Meg	Low Input AF Amp. Grid
R21	2700Ω			BTS-2700	Low Input AF Amp. Cathode
R22	100KΩ			BTS-100K	Low Input AF Amp. Cathode
R23	6800Ω			BTS-6800	Low Input AF Amo. Cathode
R24	270KΩ			BTS-270K	Feedback Network
R25	2.2Meg			BTS-2.2Meg	Mike Input Shunt
R26	2.2Meg			BTS-2.2Meg	Mike Input Shunt
R27	220KΩ			BTS-220K	Tone compensation
R28	2.2Meg			BTS-2.2Meg	Tone Compensation
R29	270KΩ			BTS-270K	Hi Input Pre Amp. Plate
R30	2.2Meg			BTS-2.2Meg	Hi Input Pre Amp. Grid
R31	2.2Meg			BTS-2.2Meg	Hi Input Pre Amp. Grid
R32	6800Ω			BTS-6800	Hi Input Pre Amp. Cathode
R33	2700Ω			BTS-2700	Hi Input Pre Amp. Cathode
R34	100KΩ			BTS-100K	Hi Input Pre Amp. Cathode
R35	470KΩ			BTS-470K	Tone Compensation
R36	470KΩ			BTS-470K	Tone Compensation
R37	3900Ω 5%			BTS-3900 5%	Tone Compensation
R38	120KΩ			BTS-120K	Tone Compensation
R39	220KΩ 5%			BTS-220K 5%	Tone Compensation
R40	120KΩ			BTS-120K	Tone Compensation
R41	6800Ω			BTS-6800	Tone Compensation
R42	3900Ω 5%			BTS-3900 5%	Bass Tone Amp. Cathode

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA BELL SOUND† PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.140ADC	90Ω	5Henries	B-20055	C-2309 ①		R-7150①	① Drill One New Mounting Hole
L2	.040ADC	570Ω	20 Henries	B-20208A	C-1003	C-2987	R-1240①	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA BELL SOUND PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.160ADC		NE-5	5R1	

FUSES

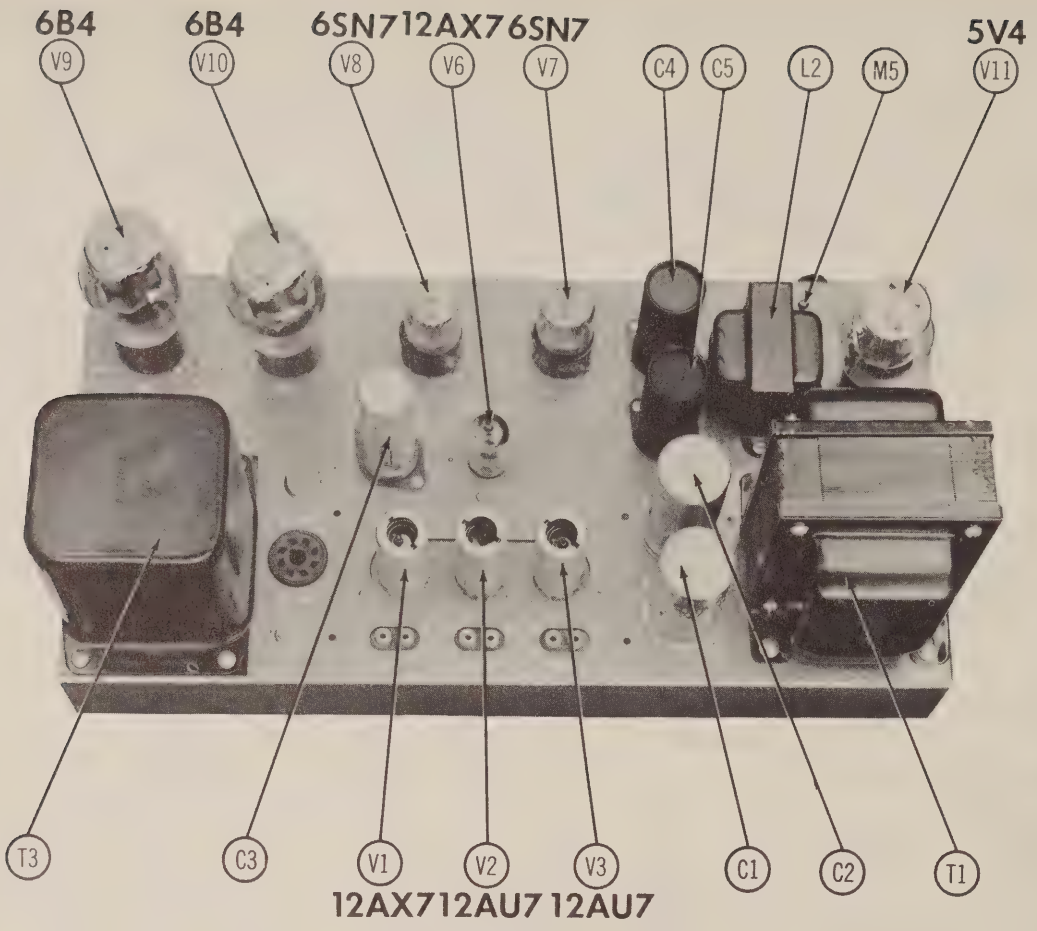
ITEM No.	TYPE	RATING	REPLACEMENT DATA BELL SOUND PART No. FUSE	BELL SOUND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M2	3AG	3A. 250V			312003	342001	

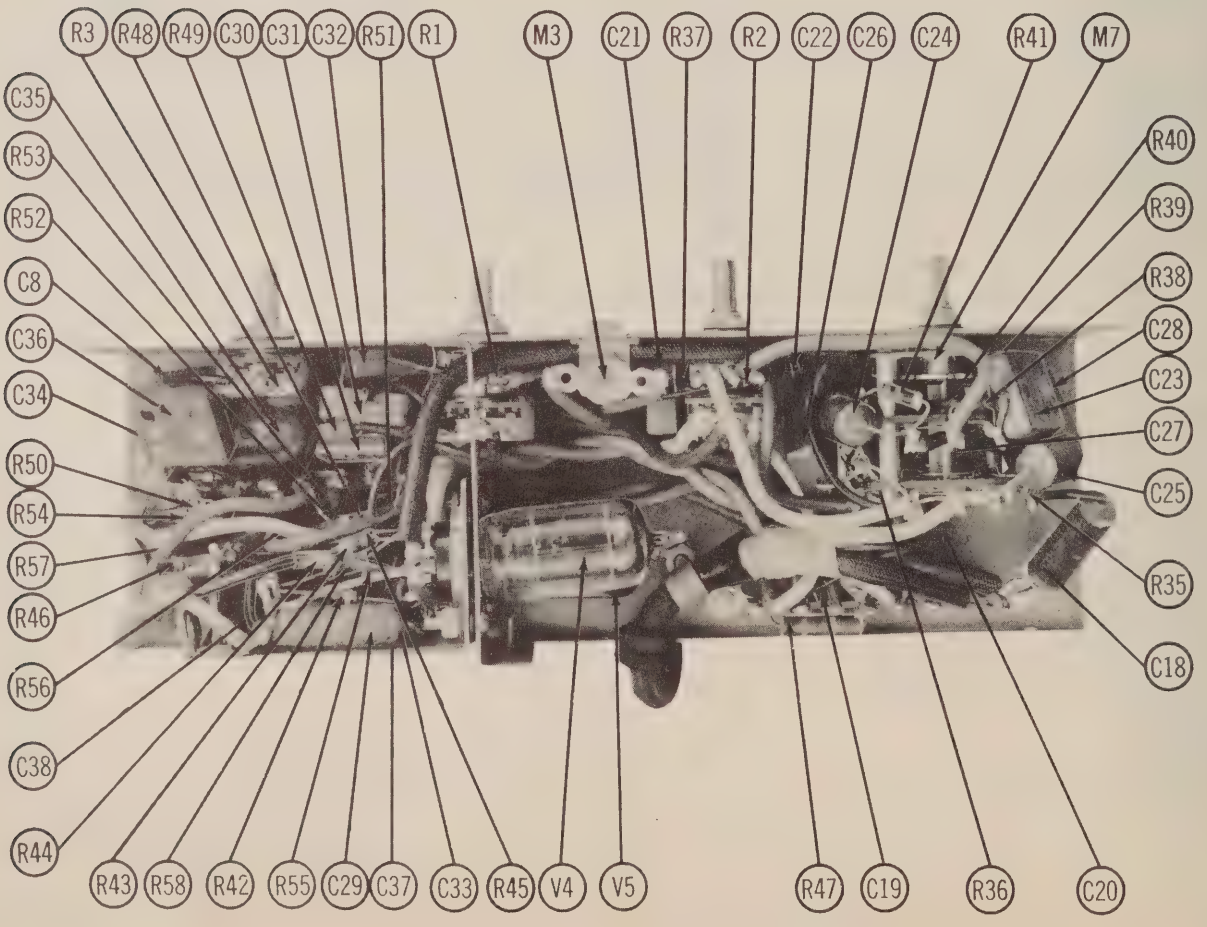
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA BELL SOUND PART No.		NOTES
M3	Bayonet	6-8	.15	Brown			Type #47
M4	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M5	Switch		ON/OFF
M6	Switch		Remote ON/OFF
M7	Switch		Function


6B4
6B4
6SN7
12AX7
6SN7
5V4
V9
V10
V8
V6
V7
C4
C5
L2
M5
V11
T3
C3
V1
V2
V3
C1
C2
T1
12AX7
12AU7
12AU7


R3
R48
R49
C30
C31
C32
R51
R1
M3
C21
R37
R2
C22
C26
C24
R41
M7
C35
R53
R52
C8
C36
C34
R50
R54
R57
R46
R56
C38
R44
R43
R58
R42
R55
C29
C37
C33
R45
V4
V5
R47
C19
R36
C20
R40
R39
R38
C28
C23
C27
C25
R35
C18

PHOTOFACT* Folder

CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A

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MODEL 15TV1-8958A

CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A

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DATE 3-52 SET 161 FOLDER 3

PHOTOFACT* Folder
*TRADE MARK

CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A

CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A

CORONADO MODEL 15TV1-43-8958A

TRADE NAME	Coronado Models 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A
MANUFACTURER	Gamble-Skogmo Inc., 15N. 8th St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Twenty Four
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2 Amp. @ 117 Volts AC
TUNING RANGE—(TV)	Channels 2 thru 13 (continuous tuner) AM 540-1600KC

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing 17
Disassembly Instructions 17
Horizontal Sweep Circuit Adjustments 12
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet - Rear View 12
Capacitor and Alignment Identification 4, 9
Photos (Cont.)
Chassis - Top View 3
RF tuner 10
Resistor and Inductor Identification 11, 18
Resistance Measurements 8
Schematic 2
Tube Placement Charts 5

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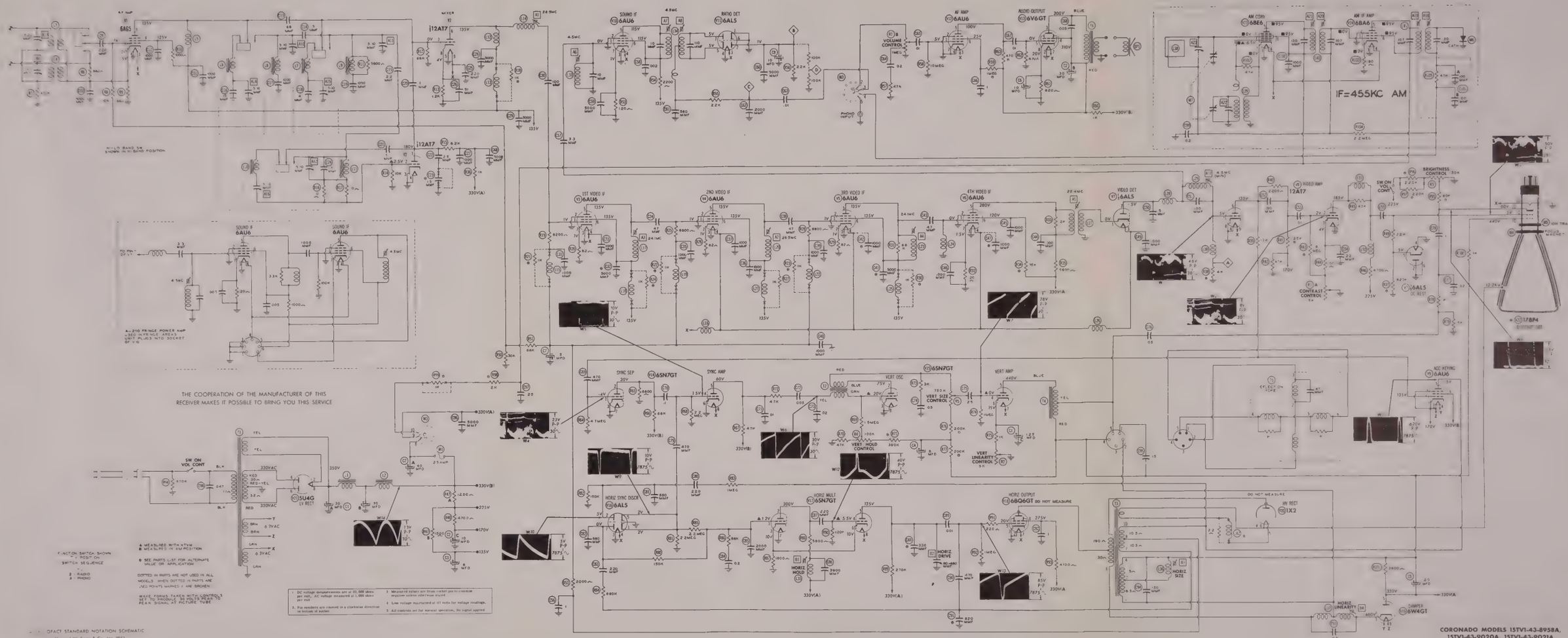
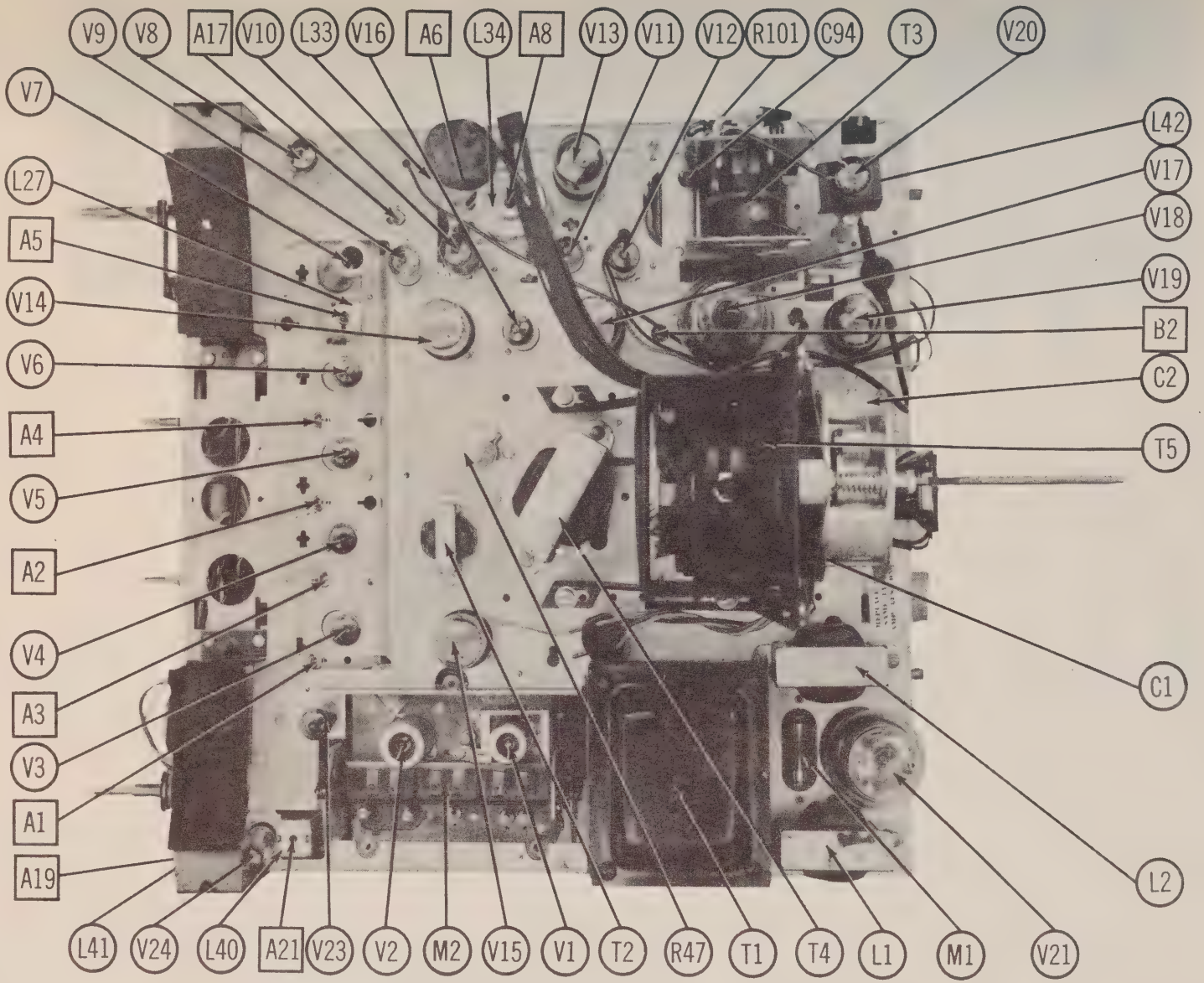
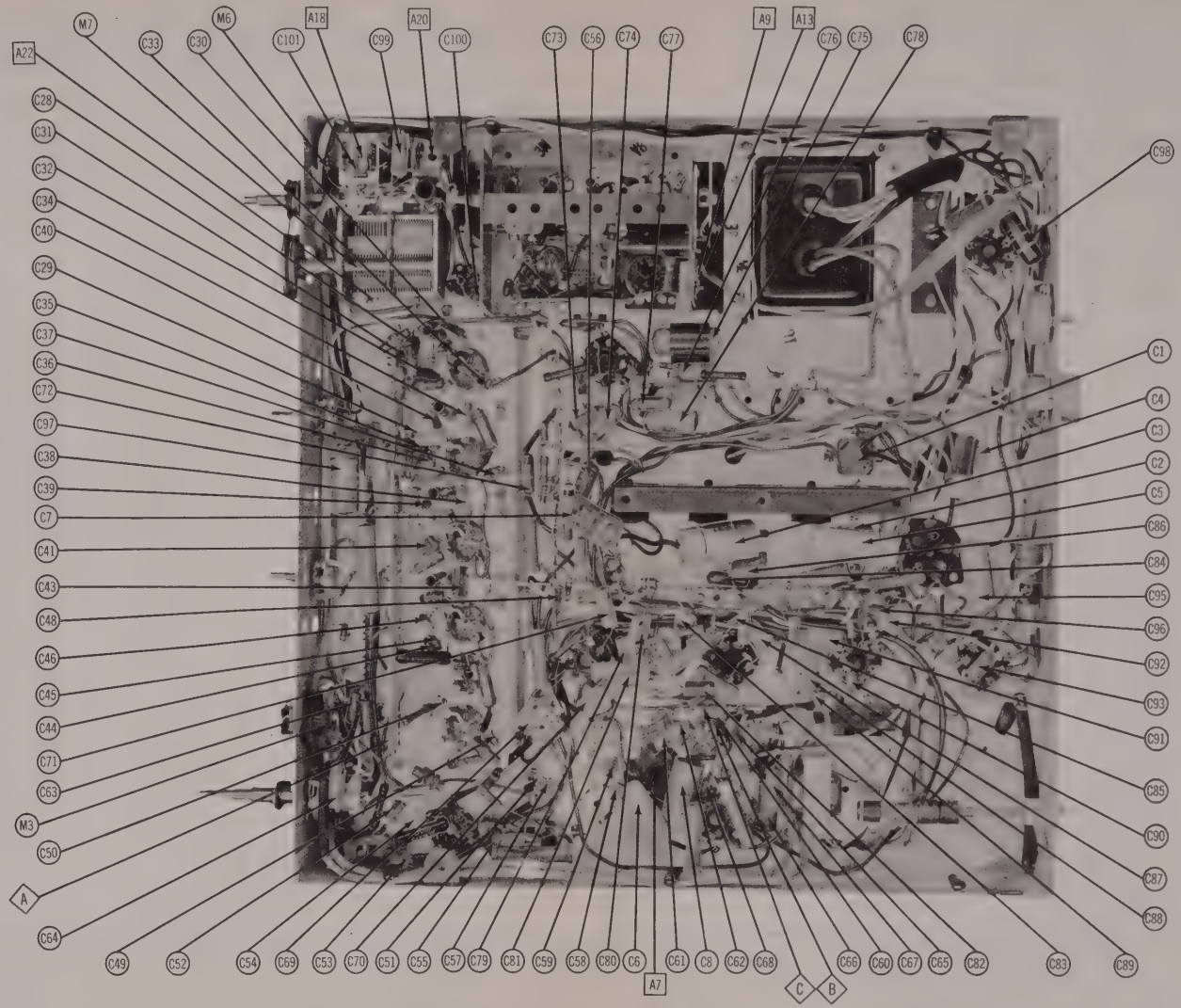
DATE 3-52 SET 161 FOLDER 3


IF=455KC AM
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A

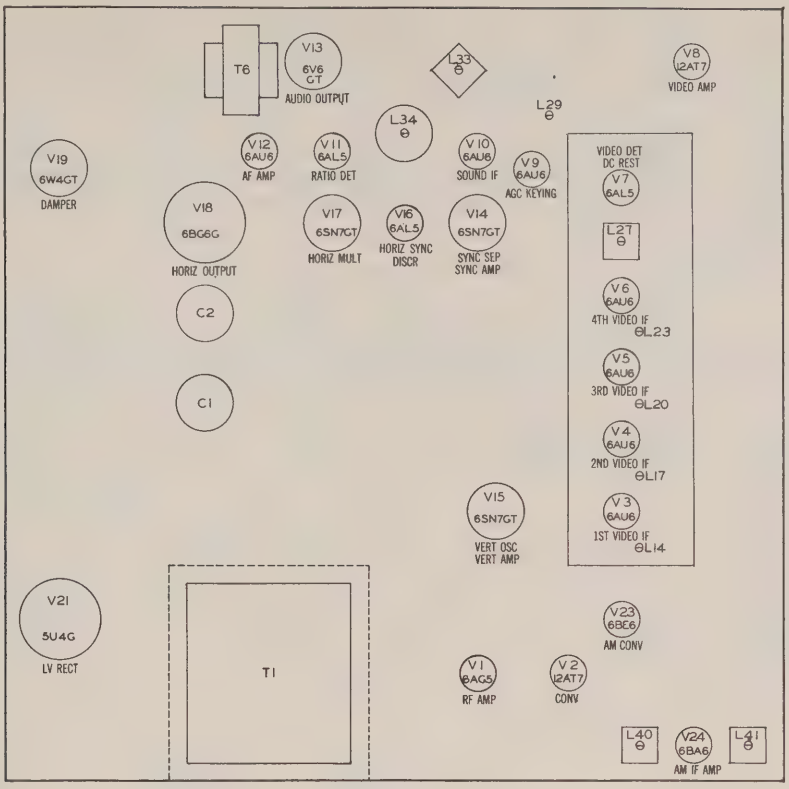
CORONADO MODELS 15TV1-43-8958A, 15TV1-43-9020A, 15TV1-43-9021A



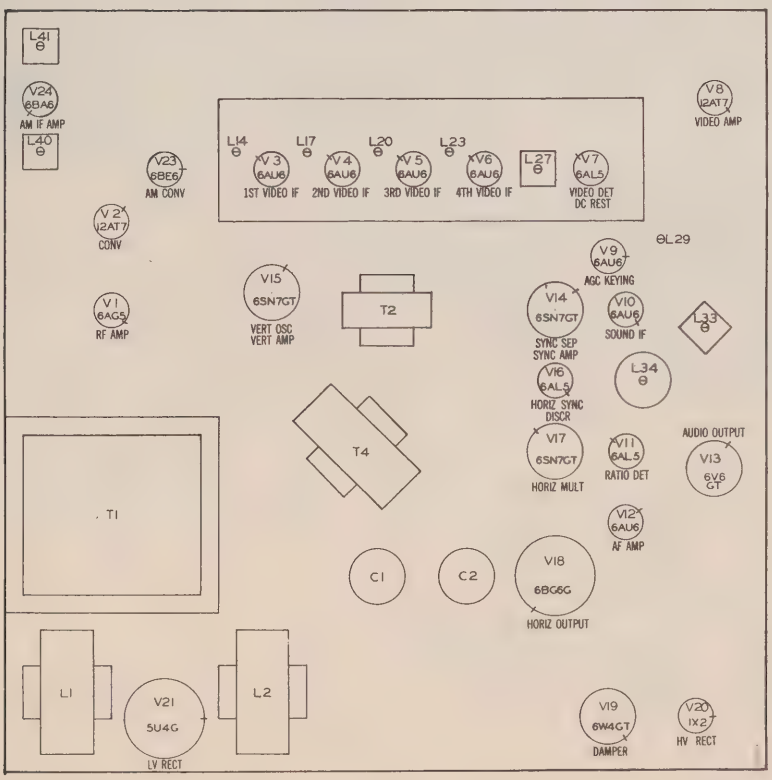
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to disable the high voltage.

VIDEO IF ALIGNMENT

Tune to a channel which causes no interference. To check for interference turn the tuning control slightly. If the VTVM reading changes tune to another position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	26.5MC (unmod.)	See note above	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for max. deflection. Attenuate signal generator to maintain 1 Volt, (above noise) reading.
2.	"	"	24.1MC	"	"	A3, A4,	"
3.	"	"	25.4MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. Tune to a channel which causes no interference. To check for interference turn the tuning control slightly, if the response curve changes tune to another position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24.5MC (10MC swp.)	23.75MC 26.75MC	See note above	Vert. amp. thru 10KΩ to Point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point (B) to chassis. The junction of these two resistors is alignment Point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to Point (A). Low side to chassis.	4.5MC (10MC swp.)	Any channel not used locally.	DC probe to Point (B). Common to chassis.	A6, A7	Adjust for max. deflection.
6.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A posiitive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to Point (A). Low side to chassis.	4.5MC (450KC swp)	4.5MC	Any channel not used locally.	Vert. amp to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C8. Adjust for maximum amplitude and symmetry as per Fig. 2.
6.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C8. Adjust A8 so 4.5MC occurs at center of crossover lines as per Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Pre-set the adjustment screws as shown in Fig. 5.
Pre-set the cores of L6, L7, L8, L9, L10 and L11 as follows:
Turn the core carriage to the top of its stroke with the switch in low band position.
Turn the cores of all coils until the top edge of the core is 1.6 inches above the coil mounting clip.
Turn the low band oscillator coil L11 an additional four turns out of the coil.

LOW BAND ALIGNMENT

If trimmer A10 reaches maximum capacity and more capacity is needed, screw core of L8 into coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC swp.)	83.25MC 87.75MC	6	Vert. amp. thru 10KΩ to Point (A). Low side to chassis.	A9, A10, A11	Adjust for maximum amplitude of response with band width shown in Fig. 4.
8.	"	"	"	"	"	"	A12	Adjust to place video marker at 50% on response curve as shown in Fig. 4.
9.	"	"	63MC (10MC swp.)	61.25MC 65.75MC	3	"		Adjust tuning control until the video marker on each channel is at 50%. If necessary retouch A10 & A11 for compromise which gives best response over the low band channel.
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

HIGH BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to Point (A). Low side to chassis.	A13, A14, A15	Adjust for maximum amplitude of response with band width shown in Fig. 4.
11.	"	"	"	"	"	"	A16	Adjust to place video marker at 50% on response curve as shown in Fig. 4.
12.	"	"	207MC (10MC swp.)	205.25MC 209.75MC	12	"		Turn tuning control until video marker occurs at 50% on each channels response curve. If necessary retouch A14 & A15 for compromise which gives best response over the high band channels.
			201MC (10MC swp.)					

ALIGNMENT INSTRUCTIONS (CONT.)

AM TUNER ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD	High side to Pin 7, (grid) of 6BE6, (V23). Low side to chassis.	455KC (400∿ mod.)	AM	Tuning gang fully open.	Across voice coil.	A18, A19 A20, A21	Adjust for maximum output.
14.		Loop	1620KC	"	"	"	A22	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
15.		"	1400KC	"	"	"	A23	"

4.5MC TRAP ADJUSTMENT

After alignment is completed and receiver is restored to normal operation, connect an antenna and tune in a strong TV station. Examine the picture for evidence of 4.5MC beat interference, (grain appearance in horizontal lines). If interference is noted adjust A17 to eliminate or minimize.

FIG.1

FIG. 2

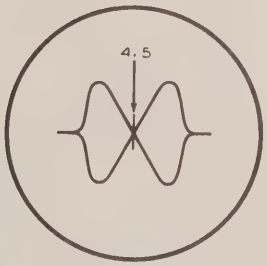


FIG. 3

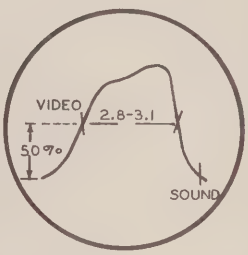


FIG.4

ALIGNING TRIMMERS

The dimensions shown are approx from the shoulder of screw head to mounting base

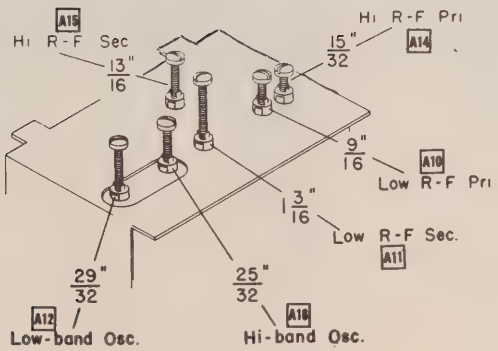


FIG.5

...EN... OF
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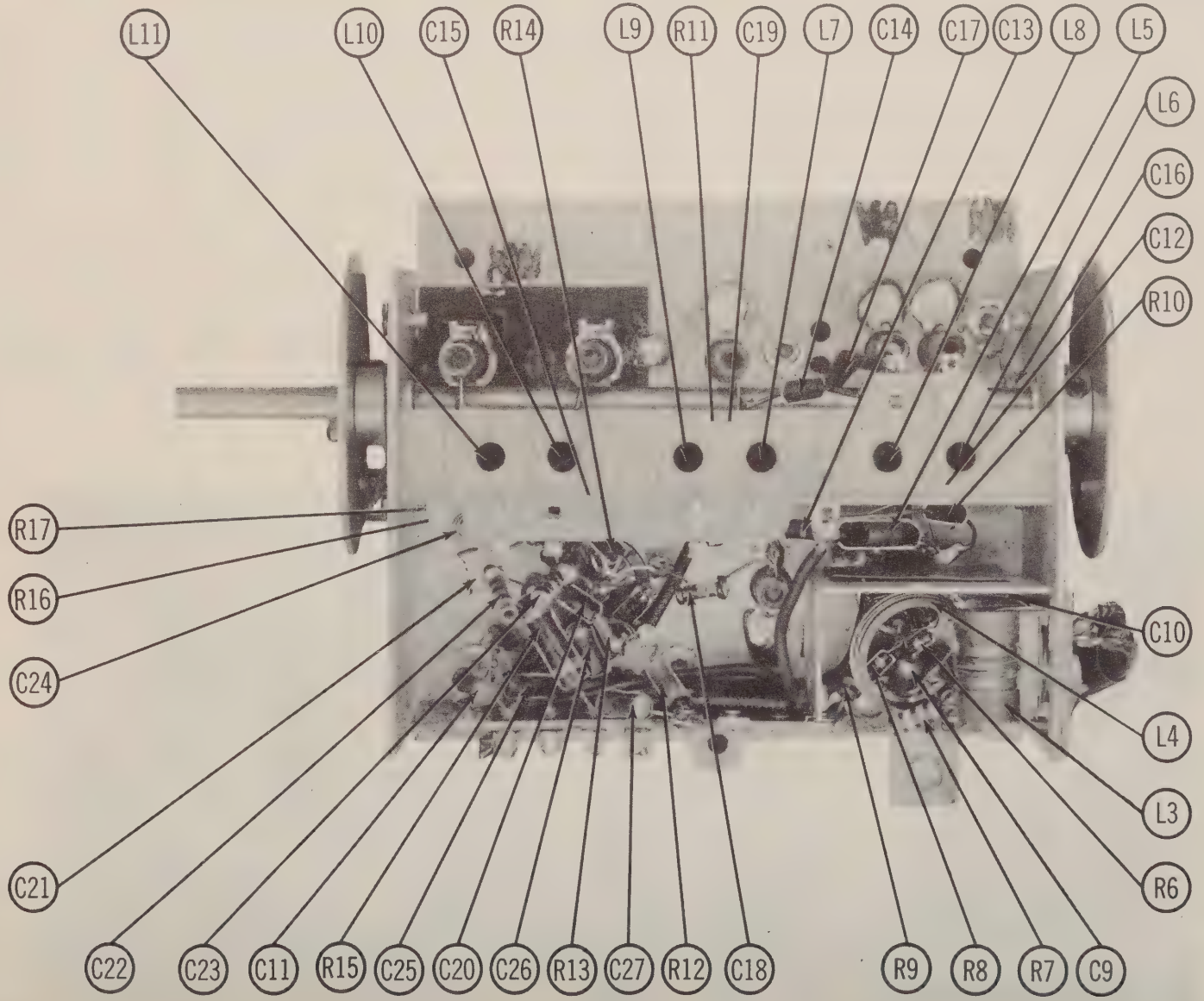
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	40KΩ	68Ω	.1Ω	0Ω	†2.8KΩ	†3.8KΩ	68Ω		
V 2	12AT7	†9.3KΩ	10KΩ	0Ω	0Ω	0Ω	†2.8KΩ	68KΩ	1.2KΩ	.1Ω
V 3	6AU6	90KΩ	0Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	82Ω		
V 4	6AU6	90KΩ	0Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	82Ω		
V 5	6AU6	90KΩ	0Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	82Ω		
V 6	6AU6	2.1Ω	0Ω	0Ω	.1Ω	†5.7KΩ	†75KΩ	120Ω		
V 7	6AL5	.7Ω	0Ω	.2Ω	0Ω	1Meg	0Ω	4KΩ		
V 8	12AT7	†6KΩ	1.8Meg	300Ω	0Ω	0Ω	†9.2KΩ	4KΩ	0Ω	.1Ω
V 9	6AU6	†19KΩ	†6KΩ	¶0Ω	¶.2Ω	80KΩ	†60Ω	†6KΩ		
V 10	6AU6	3Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	120Ω		
V 11	6AL5	0Ω	22KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 12	6AU6	10Meg	0Ω	.1Ω	0Ω	†470KΩ	†1Meg	0Ω		
V 13	6V6GT	0Ω	0Ω	†1.5KΩ	†1.1KΩ	470KΩ	†60Ω	.1Ω	820Ω	
V 14	6SN7GT	4.7Meg	6.4KΩ	0Ω	2.2Meg	†47KΩ	0Ω	0Ω	.1Ω	
V 15	6SN7GT	1.5Meg	#1.2Meg	0Ω	1Meg	#690Ω	1.3KΩ	.1Ω	0Ω	
V 16	6AL5	2.2Meg	150KΩ	0Ω	.1Ω	2.2Meg	0Ω	4.5Meg		
V 17	6SN7GT	4.4Meg	†5.7KΩ	1.6KΩ	120KΩ	†270KΩ	1.6KΩ	0Ω	.1Ω	
V 18	6BG6G	Inf.	0Ω	0Ω	1Meg	1Meg	90KΩ	.1Ω	†4.8KΩ	TOP CAP #35Ω
V 19	6W4GT	Inf.	Inf.	80KΩ	#9Ω	†60Ω	#5Ω	¶.2Ω	¶0Ω	
V 20	1X2	PINS 1 THROUGH 9 HAVE INF RESISTANCE								TOP CAP #220Ω
V 21	5U4G	Inf.	26KΩ	Inf.	30Ω	470KΩ	32Ω	470KΩ	26KΩ	
V 22	17BP4	0Ω	1Meg	PIN 10 #1KΩ	PIN 11 110KΩ	PIN 12 .1Ω				
V 23	6BE6	47KΩ	.7Ω	0Ω	.1Ω	■†13KΩ	■†13KΩ	■3Meg		
V 24	6BA6	■3Meg	0Ω	0Ω	.1Ω	■†13KΩ	■†13KΩ	180Ω		

ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED
ALL CONTROLS SET FOR NORMAL OPERATION - NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V19
¶ MEASURED FROM 170VDC LINE
■ MEASURED IN AM POSITION


L11
L10
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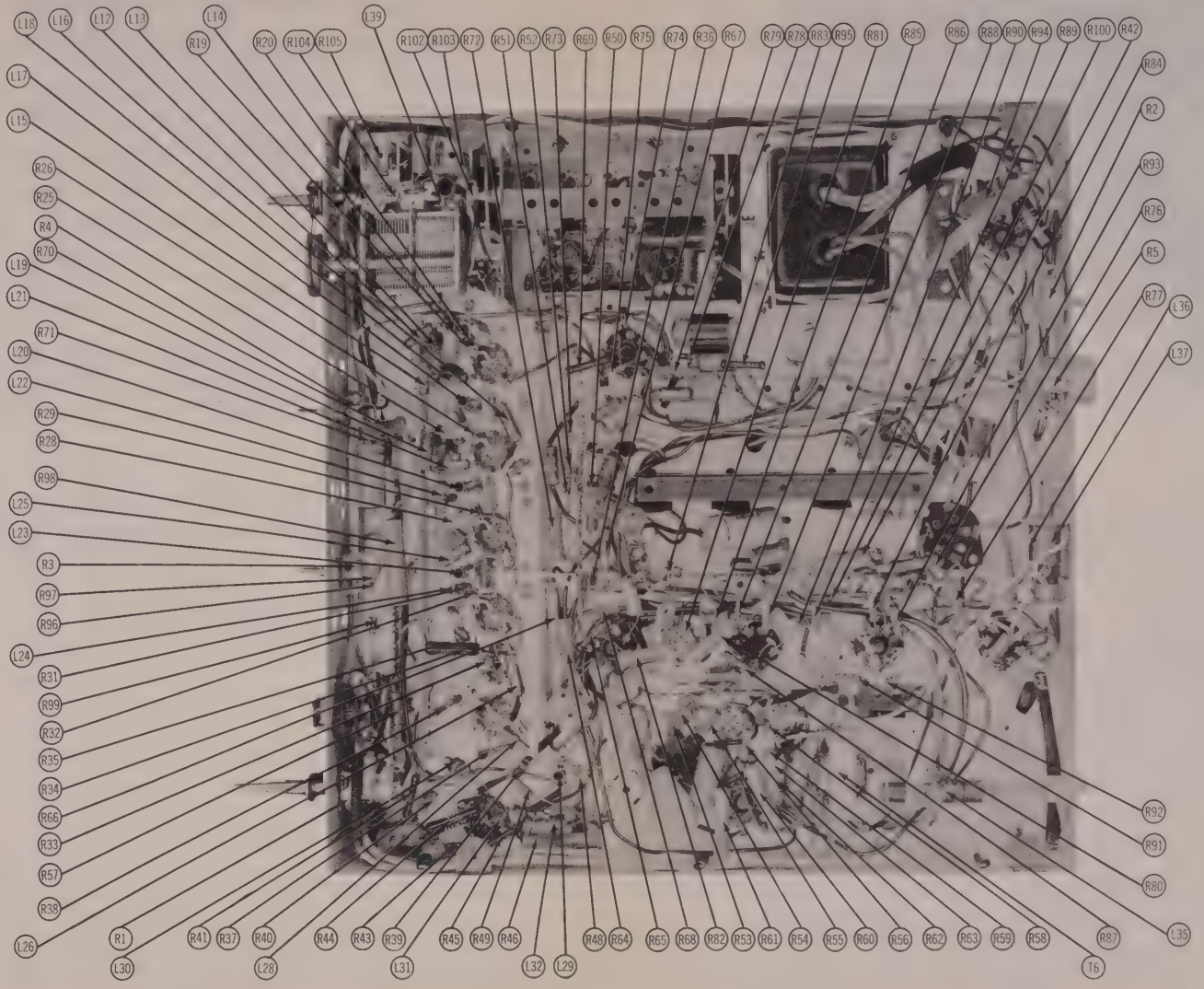
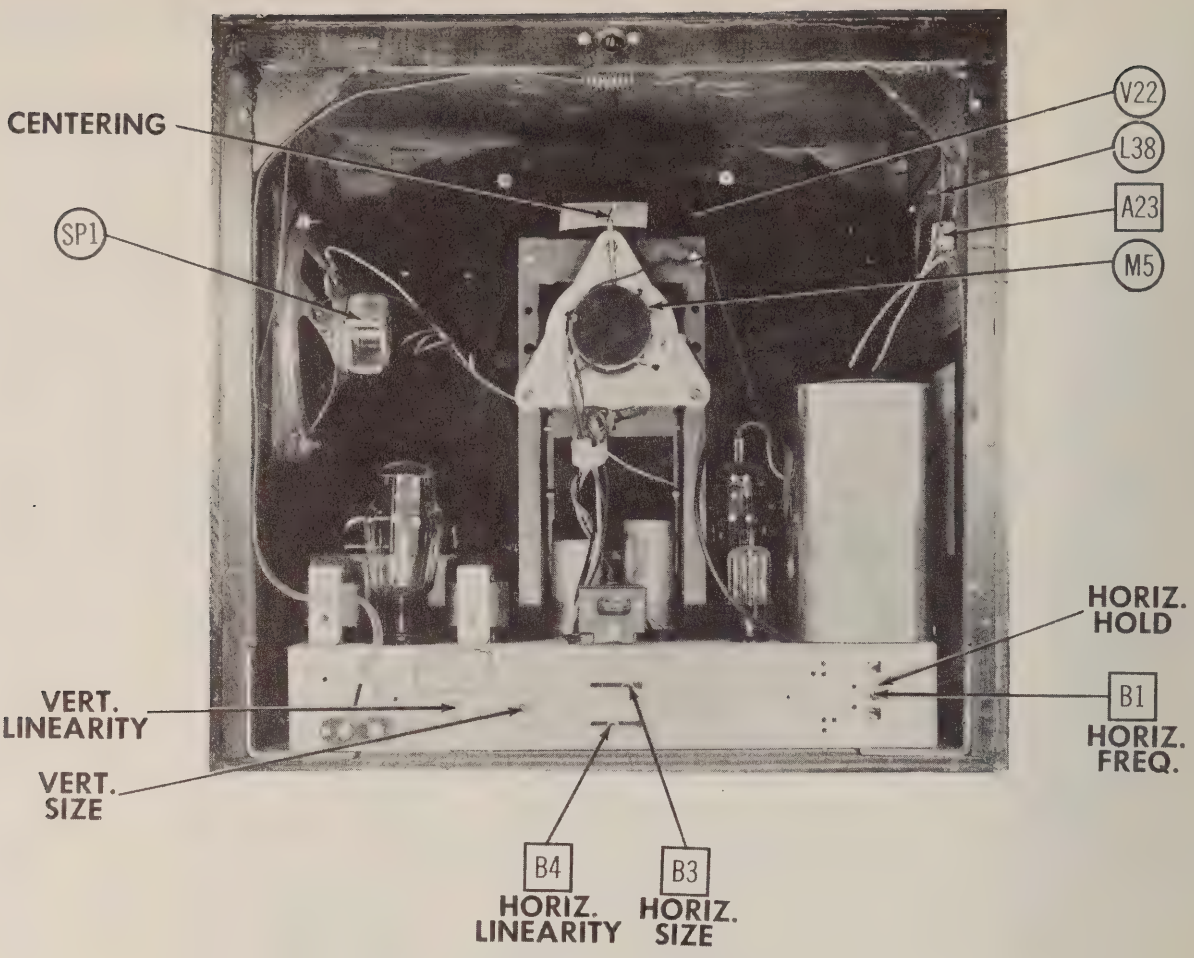
C27
R12
C18
R9
R8
R7
C9

RF TUNER



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold thumb screw all the way in, (clockwise), and back out two full turns.

Adjust the horizontal frequency slug, (B1), to the center of the range over which the picture synchronizes horizontally. Any subsequent adjustments of the horizontal frequency may be made with the thumbscrew.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding or bright vertical lines appearing in the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since both width and horizontal linearity are effected by the drive trimmer, it may be necessary to adjust them alternately for best results.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det.-DC Rest.	6AL5	6AL5	6BT	
V8	Video Amp.	12AT7	12AT7	9A	
V9	Keyed AGC	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp.	6AU6	6AU6	7BK	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync. Sep.-Sync. Amp.	6SN7GT	6SN7GT	8BD	
V15	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Sync. Discr.	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rect.	1X2	1X2	9Y	
V21	LV Rect.	5U4G	5U4G	5T	
V23	AM Converter	6BE6	6BE6	7CH	
V24	AM IF Amp.	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	CORONADO PART No.	SYLVANIA PART No.	THOMAS PART No.		
V22A	17BP4A	17BP4A	17BP4	12D	
B	17AP4A		17BP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	450	8C-18487	AFH3-131		UPT409		TVL-2759	■ Filter
B	30	450		PRS25/100				TVA-1207	● Filter
C	125	25							▲ Vert. Amp. Cathode
C2A	60	450	8C-17845	AFH3-40		UPT36145		TVL-3790	■ Decoupling
B	30	450							● Audio Output Dec.
C	10	450							▲ Decoupling
C3	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C4	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Vert. Osc. Dec.
C5	20	150	8C-19546	PRS150/20		BR2015A		TVA-1410	Decoupling Dec..
C6	10	50	8C-17183	PRS50/10		BR105		TVA-1304	Audio Output Cathode
C7	5	50	8C-19424	PRS150/4		BR550		TVA-1303	AGC Filter
C8	10	75	8C-19564	PRS150/12		BR10|5		TVA-1406	Stabilizing Cap.
C9	220		8G-16045	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	5000		8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Plate
C12	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C13	.68		8G-12495-1		TCZ-.68		NP0K-R68		RF Coupling
C14	1.7		8G-12495-8	SI1.5NP0	TCZ-1.5		NP0K-1R7		RF Coupling
C15	2.2		8G-12495-4		TCZ-2.2		NP0K-2R2		RF Coupling
C16	15		8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer
C17	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Trimmer
C18	4		8G-19314				NP0K-040		Fixed Trimmer
C19	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Trimmer
C20	1		8G-12495-2		TCZ-1		NP0K-010		Osc. Coupling
C21	51		8G-11891		TCN-51		N750L-510		Osc. Feedback
C22	2.5		8G-19568						Fixed Trimmer
C23	15		8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer *
C24	7		8G-19572				N330K-070		Fixed Trimmer
C25	220		8G-16045	SI220	D6-221		GP2K-221	5GA-T22	Conv. Fil.
C26	51		8G-11891		TCN-51		N750L-510		Mixer Cathode
C27	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C28	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C29	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C30	100	500	8F3-8	1468-0001	D6-101		GP1K-101	1FM-31	IF Coupling
C31	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C32	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec. ‡
C33	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C34	47	500	8F3-109	1468-00005	D6-470		GP1K-470	1FM-45	IF Coupling
C35	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C36	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C37	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C38	47	500	8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C39	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C40	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C41	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec. ‡
C42	1000		8G-13201	SI1000	D6-102	SI1000	GP2L-102	5HK-D1	3rd. Video IF Fil. *
C43	47	500	8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C44	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Plate
C45	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Screen
C46	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Cathode
C47	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Fil. *
C48	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C49	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C50	5		8G-12166	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C51	100	500	8F1-113	1469-00001		5R5T1		MS-41	Fixed Trimmer

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52	100	500	8F1-113	1469-00001		SR5T1		MS-41	Video Coupling
C53	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C54	33		8G-11893		TC2-22		MP0K-330	5TCC-Q22	Video Amp. Cathode
C55	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C56	.1	200	8D-17259	P288-1	DF-104	PTE4P1		3TM-P1	Video Coupling
C57	3.8			S13.3NP0	TC2-3.3		NP0K-3R3		Sound IF Coupling
C58	.002	500	8D-15838	P688-002	D6-202	PTE2D2	GP2-333-202	6TM-D2	Sound IF Decoupling
C59	5000		8G-13962	BPD-005	DD-502	ID5D5	81J-005	5HK-D5	Sound IF Cathode
C60	5000		8G-13962	BPD-005	DD-502	ID5D5	81J-005	5HK-D5	RF Bypass
C61	560	500						M3-36	Diode Load Cap.
C62	2000		8G-19522	S12000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-emphasis
C63	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C64	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C65	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Screen
C67	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C68	.005	600	8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C69	470	500	8F3-121	1469-0005		SR5T3		M3-35	Sync. Coupling
C70	.1	200	8D-17259	P288-1	DF-104	PTE4P1		3TM-P1	Sync. Coupling
C71	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sync. Amp. Plate
C72	.005	400	8D-17606	P688-006	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Sync. Coupling
C73	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Vert. Integrator Net.
C74	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharge
C75	.35	400	8D-17784	P488-25		QT2P25		2TM-P25	Vert. Sweep Coupling
C76	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Sweep Coupling
C77	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Integrator Net
C78	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C79	470	500	8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz.Sync. Coupling
C80	220	500	8F3-117	1469-00025		2R5T5			Horiz. Feedback
C81	680	500	8F3-123	147-0007		2R5T7		M3-37	Voltage Divider
C82	680	500	8F3-123	147-0007		2R5T7		M3-37	Voltage Divider
C83	220	500	8F3-117	1469-00025		2R5T5			Horiz. Feedback
C84	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C85	2000		8G-19522	S12000	D6-202	1W5D2	GP2-333-202	5HK-D2	AFC Filter
C86	3900	500	8F11-132	1484-004		1DR5D4			Fixed Trimmer
C87	220	500	8F3-117	1469-00025		5R5T5			Horiz. MV Feedback
C88	330	500	8F3-118	1469-00035				2TM-S2	Horiz. Discharge ¶
C89	.001	800	8D-19193	P888-001	D6-102	PTE5D1	GP2L-102	6TM-D1	Integrator Net
C90	47		8G-12198	S147N750	TCN-47		N750K-470	5TCC-Q47	Horiz. Sweep Coupling
C91	820	500	8F3-124						Horiz. Feedback
C92	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Output Screen
C93	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Fixed Trimmer
C94	150	1500	8G-19498					2TM-P15	Fixed Trimmer
C95	15	200	8D-15867	P288-15				5HK-D5	Horiz. Sweep Coupling
C96	5000		8G-13962	BPD-005	DD-502	1D5D5	81J-005	5HK-D5	RF Bypass
C97	.25	400	8D-17784	P488-25		QT4P25		4TM-P25	RF Bypass
C98	.047	400	8J-16081	P488-05		PTE4S5		4TM-S5	Line Filter
C99	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	AVC Filter
C100	1000		8G-13201	S1000	D6-102	1W5D1	GP2L-102	5HK-D1	Screen Bypass
C101A	100			S1100	• PC-50	5W5T1	GP1K-100	• 100C1	Det. RF Filter
B	100			S1100		5W5T1	GP1K-100		Det. RF Filter

* Not used in all Models
† Some Models use 1000MMF in this application (Part No. 8G-13201)
¶ Some Models use 750MMF in this application
† Some Models use 470MMF in this application (Part No. 8F3-121)
• Items C101A, C101B, R105 are combined in one unit.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5KΩ	½	10A-18441				Contrast Control - Panel
B	1MEg						Volume Control & Sw. -Rear, tapped @100KΩ
R2A	5KΩ	½	10B-19218	Q11-114	AM-19-S	AN-10	Vertical Linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R2A per instructions
R3A	50KΩ	½	10B-17764	Q11-123	AG-44-S	B-31	Brightness control
B	Shaft		Not req.	Not Req.	KS8-3	Not Req.	Attach to R3A per instructions
R4A	100KΩ	½	10B-17275	Q11-128	AG-49-S	B-40	Vertical Hold Control
B	Shaft		Not Req.	Not Req.	KS8-3	Not Req.	Attach to R4A per instructions
R5A	750KΩ	½	10B-19220				Vertical Size Control
B	Shaft		Not Req.				Attach to R5A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE NOTED
R6	680Ω 10%	1	9B1-80		Antenna Coil Shunt
R7	470KΩ	½		BTS-470K	Antenna Isolation
R8	10KΩ 10%	½	9B1-74		AGC Network
R9	68Ω	½	9B1-48		RF Amp. Cathode
R10	1000Ω	½	9B1-13	BTS-1000	RF Amp. Screen
R11	5600Ω	½	9B1-71		Mixer Grid Coil Shunt
R12	68KΩ 10%	½	9B1-84		Mixer Grid
R13	1200Ω 10%	½	9B1-63	BTS-1200	Mixer Cathode
R14	10KΩ 10%	½	9B1-74		Osc. Grid
R15	8200Ω 10%	1	9B2-73		Osc. Plate
R16	10Ω	½	9B1-38		Parasitic Suppressor
R17	10Ω	1	9B1-38		Parasitic Suppressor
R18	1000Ω	½	9B1-13	BTS-1000	Decoupling - See Note 1
R19	8200Ω 10%	½	9B1-73		1st. Video IF Amp. Grid
R20	82Ω 10%	½	9B1-49	BTS-82	1st. Video IF Amp. Cathode
R21	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 1
R22	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 1
R23	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 1
R24	1000Ω	½	9B1-13	BTS-1000	1st. Video IF Amp. Decoupling - See Note 1
R25	6800Ω 10%	1	9B1-72		2nd. Video IF Amp. Grid
R26	82Ω 10%	½	9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R27	1000Ω	½	9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling
R28	6800Ω 10%	1	9B1-72		3rd. Video IF Amp. Grid
R29	82Ω 10%	½	9B1-49	BTS-82	3rd. Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
R30	1000Ω	½	9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling - See Note 1
R31	6800Ω 10%	½	9B1-72		3rd. Video IF Amp. Coil Shunt
R32	120Ω 10%	½	9B1-51	BTS-120	4th. Video IF Amp. Cathode
R33	12KΩ 10%	½	9B1-76		4th. Video IF Amp. Coil Shunt
R34	75KΩ	½	9B2-84		4th. Video IF Amp. Screen - See Note 2
R35	5600Ω 10%	½	9B1-71		4th. Video IF Amp. Plate Decoupling
R36	1000Ω 10%	½	9B1-63	BTS-1000	Decoupling
R37	820KΩ	½	9B1-98	BTS-820K	DC Restorer Cathode - See Note 3
R38	4KΩ	½	9B1-69	BTS-3900	Video Det. Diode Load See Note 4
R39	10KΩ	½	9B1-74	BTS-10K	Isolation
R40	2200Ω	½	9B1-66	BTS-2200	Video Amp. Plate
R41	1250Ω	½	9B1-62		Video Amp. Plate - See Note 5
R42	47KΩ	2	9B4-82	BTB-47K	Voltage Divider
R43	1.8MEg	½	9B1-103	BTS-1.8Meg	Video Amp. Grid - See Note 6
R44	100Ω	1	9B1-50	BTA-100	Video Amp. Cathode
R45	47KΩ	½	9B1-82	BTS-47K	Peaking Coil Shunt
R46	4700Ω	2	9B4-70	BTB-4700	Video Amp. Plate
R47A	1200Ω	10	9M-19995		Voltage Divider - Wire Wound
B	1500Ω	10			Voltage Divider - Wire Wound
R48	4700Ω	½	9B2-70	BTA-4700	Voltage Divider
R49	22KΩ	½	9B1-78	BTS-22K	Picture Tube Grid
R50	33KΩ	½	9B1-80	BTB-33K	AGC Network
R51	68KΩ 10%	½	9B1-84	BTS-68K	AGC Network
R52	2200Ω	½	9B1-66	BTS-2200	AGC Network
R53	120Ω	½	9B1-51	BTS-120	Sound IF Amp. Cathode
R54	2200Ω	½	9B1-66	BTS-2200	Sound IF Amp. Decoupling
R55	22KΩ	½	9B1-78		De-emphasis
R56	22KΩ	½	9B1-78	BTS-22K	Ratio Det. Diode Load
R57	47KΩ	1	9B1-82	BTA-47K	Tone Compensation
R58	10MEg	½	9B1-37	BTS-10Meg	Audio Amp. Grid
R59	1MEg	½	9B1-101	BTS-1Meg	Audio Amp. Screen - See Note 7
R60	1000Ω	1	9B4-62	BTA-1000	Audio Amp. Screen Decoupling
R61	820Ω	1	9B2-61	BTA-820	Audio Output Cathode
R62	470KΩ 10%	½	9B1-29	BTS-470K	Audio Output Grid
R63	470KΩ	½	9B1-29	BTA-470K	Audio Amp. Plate
R64	4.7Meg	½	9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R65	680KΩ	½	9B1-73	BTS-6800	Volt. Divider
R66	68KΩ 10%	2	9B4-84	BTB-68K	Sync. Sep. Plate
R67	47KΩ 10%	2	9B4-82	BTB-47K	Sync. Amp. Plate
R68	2.2Meg	½	9B1-102	BTS-2.2Meg	Sync. Amp. Grid
R69	1.5Meg	½	9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R70	47KΩ	½	9B1-82	BTS-47K	Voltage Divider
R71	390KΩ 10%	½	9B1-93	BTS-390K	Voltage Divider - See Note 8
R72	47KΩ	½	9B1-82	BTS-47K	Integrator Network
R73	3300Ω	½	9B1-88	BTS-3300	Vertical Peaking
R74	1MEg	½	9B1-98	BTA-1Meg	Vertical Amp. Grid
R75	1000Ω 10%	½	9B1-62	BTS-1000	Vertical Amp. Cathode
R76	200KΩ 5%	½	9B1-90	BTS-200K 5%	Vertical Det. Diode Plate See Note 9
R77	200KΩ 5%	½	9B1-90	BTS-200K 5%	Decoupling See Note 9
R78	1000Ω 10%	½	9B1-62	BTS-1000	Vertical Blanking Network
R79	15KΩ	½	9B1-76	BTS-15K	Vertical Blanking Network
R80	150KΩ	½	9B1-88	BTS-150K	Horiz. Sync. Diode Load
R81	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. Sync. Diode Load
R82	150KΩ	½	9B1-88	BTS-150K	Horiz. Sync. Diode Load
R83	1MEg 10%	½	9B1-98	BTA-1Meg	AFC Feedback
R84	680KΩ 10%	½	9B1-96	BTS-680K	AFC Feedback
R85	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. AFC Filter
R86	68KΩ 10%	½	9B1-84	BTS-68K	Horiz. AFC Filter
R87	1500Ω	½	9B1-64	BTS-1500	Horiz. MV Cathode
R88	5600Ω	½	9B2-71	BTA-5600	Horiz. MV Plate
R89	270KΩ	½	9B1-91	BTS-270K	Horiz. MV Plate
R90	120KΩ 10%	½	9B1-87	BTS-120K	Horiz. MV Grid
R91	220Ω	½	9B1-54		Parasitic Suppressor
R92	1MEg 10%	1	9B1-98	BTA-1Meg	Horiz. Output Grid
R93	4700Ω 10%	1	9B2-70	BTA-4700	Horiz. Output Screen
R94	470KΩ	½	9B1-29	BTS-470K	Isolation
R95	80KΩ	½	9B1-86		Picture Tube Cathode - See Note 10
R96	220KΩ	½	9B2-82	BTS-220K	Voltage Divider - See Note 11
R97	220KΩ	½		BTS-220K	Voltage Divider - See Note 13
R98	12KΩ	10	9C-20019	1 3/4A-12K	Voltage Dropping - Wire Wound See Note 12
R99	1000Ω 10%	½		BTS-1000	Voltage Dropping - See Note 13
R100	1000Ω 10%	½	9B1-62	BTS-1000	Accelerating Anode Decoupling
R101	3600Ω	½	9C12-2061	1 3/4A-3500	Decoupling
R102	47KΩ	½			Osc. Grid
R103	180Ω	½		BTS-180	AM IF Amp. Cathode
R104	2.2Meg	½		BTS-2.2Meg	AVC Network
R105	47KΩ	½		BTS-47K	Diode Filter

Note 1 Some Models use RF Chokes in this application
Note 2 Some Models use a 6800Ω Resistor in this application
Note 3 Some Models use a 1Meg Resistor in this application
Note 4 Some Models use a 3900 Ω Resistor in this application
Note 5 Some Models use a 1000Ω Resistor in this application
Note 6 Some Models use a 2.2Meg Resistor in this application
Note 7 Some Models use a 1.8Meg Resistor in this application
Note 8 Some Models use a 470KΩ Resistor in this application
Note 9 Some Models use a 220KΩ Resistor in this application
Note 10 Some Models use a 100KΩ Resistor in this application
Note 11 Some Models use a 68KΩ Resistor in this application
Note 12 Some Models use a 15KΩ Resistor in this application
Note 13 Not used in all Models
• Items R105, C101A, C101B are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @3.0A	640VCT .250ADC	5VAC @3A	6.3VAC @ 7.8A SEC. 4 6.3VAC 1.5A	12A-18839	P-8159 ①	P-3089	TP-405

① Add Series Resistor to Reduce Plate Voltage

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	210Ω	1200Ω	12M-18241	A-8111 ②	A-3000 ②	TB0-2 ③	Vert. Oscillator Trans.
T3	220Ω Tapped @ 30Ω	9Ω Tapped @ .5Ω SEC. 2 21Ω Tapped @ 10.5Ω SEC. 3 0Ω	201-19817-1				Horiz. Output Trans.
T4	690Ω Tapped @ 9Ω		12C-19048	A-8123	A-3037 ②		Vert. Output Trans.
T5A	14Ω		201-19490-1	DY-8	MDF-70		Horiz.Deflection Coils
B	50Ω						Vert. Deflection Coils

② Drill One New Mounting Hole
③ Drill New Mounting Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	8KΩ	3.2Ω	450Ω	.4Ω	12C-18743	A-8114	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA CORONADO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
	FIELD RES.	V. C. IMP.				
SP1	PM	3.2Ω	18A-19695	ST-108 Mod. P6-X	6AI	
	CONE DIA.	V. C. DIA.				
SP2	6"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 cps)	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250ADC	30Ω	1 Henry	16A-17959				
L2	.250ADC	30Ω	1 Henry	16A-17959				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	MERIT PART No.	IRC PART No.	NOTES
L3	Ant. Coil	0Ω	0Ω	201-17143			High Band
L4	Ant. Coil	.1Ω	.1Ω				Low Band (Part of L3)
L5	RF Choke	.7Ω		16A-17128			
L6	RF Coil Pri.	.1Ω		13E-17140			High Band
L7	RF Coil Sec.	.1Ω		13E-17140			High Band
L8	RF Coil Pri.	.1Ω		13E-12046			Low Band
L9	RF Coil Sec.	.1Ω		13E-12046			Low Band
L10	Osc. Coil	.1Ω		13E-17140			High Band
L11	Osc. Coil	.1Ω		13D-13155			Low Band
L12	Conv. Plate Choke	9.8Ω		16A-18025			
L13	Decoupling Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L14	1st. Video IF	.3Ω		13M-19521	TV-112		
L15	RF Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L16	Fil. Choke	.2Ω		16A-17937			
L17	2nd. Video IF	.1Ω		201-15612	TV-113		
L18	Decoupling Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L19	RF Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L20	3rd. Video IF	.1Ω		201-15612	TV-113		
L21	Decoupling Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L22	RF Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (CONT.)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CORONADO PART No.	MERIT PART No.	IRC PART No.	
L23	4th. Video IF	.1Ω		201-15612	TV-112		
L24	Grid Choke	2.2Ω		201-15608			
L25	Decoupling Choke	1.8Ω		16A-18676 or 16B-16023		CLA	2.2 Microhenries
L26	Fil. Choke	.2Ω		16A-17937			
L27	5th. Video IF	1.2Ω	.7Ω	13B-19958			
L28	Peaking Coil	7Ω			TV-186		83 Microhenries (Part of L29)
L29	4.5MC Trap	1.5Ω		201-20062	TV-151		Includes L28, C51 & C57
L30	Peaking Coil	22Ω		16A-19365	TV-188		410 Microhenries
L31	Peaking Coil	6.7Ω		16A-19485	TV-185		240 Microhenries
L32	Peaking Coil	9Ω		16A-19486	TV-188		380 Microhenries
L33	Sound IF	3Ω		13A-19514			
L34	Ratio Det. Trans.	3.8Ω	.1Ω	13M-19643	TV-110 ①		Tap at .4Ω
L35	Horiz. Osc.	70Ω		13D-19540	TV-163 ①		
L36	Horiz. Size	.3Ω		13M-18233	MWC-2		
L37	Horiz. Lin.	5.5Ω		201-20186			Tap at 1.8Ω
L38	AM Loop Ant.	2.5Ω		13E-19823			
L39	AM Osc. Coil	.9Ω	6Ω	13D-19663			
L40	1st. AM IF	16Ω	16Ω	13B-17731			
L41	2nd. AM IF	16Ω	16Ω	13B-17731			
L42	Fil. Choke	1.3Ω		16A-19818			Some Models use 2.2Ω Resistor in this application

① Drill New Mounting Holes

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CORONADO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo-Blo	1/4A	46B-18362	55F18024	313.250	351005	

MISCELLANEOUS

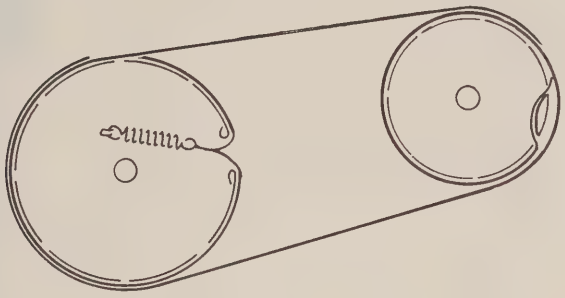
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M2	RF Tuner		
M3	Switch	20A-19642	Phono-Radio - TV
M4	Focus Magnet	55P-19600-1	
M5	Ion Trap	16M-19906	
M6	Crystal	CK-706	CK706 (AM Tuner Det.)
M7	Tuning Cap	8A-19655	17-477MMF - 28-162 MMF
B2	Trimmer	8E-18508	Horiz. Drive 80-480MMF
A23	Trimmer	8E-19838	AM Ant.
	Knob	5B-20009-76	Tuning (Model 43-8958A, 43-9020A)
	Knob	5B-20009-56	Tuning (Model 43-9021A)
	Knob	5B-19747-76	Contrast (Model 43-8958A, 43-9020A)
	Knob	5B-19747-56	Contrast (Model 43-9021A)
	Knob	5B-20007-76	Off/On Volume (Model 43-8958A, 43-9020A)
	Knob	5B-20007-56	Off/On Volume (Model 43-9021A)
	Knob	5B-18244-76	Vert. Hold, Brightness, (Models 43-8958A, 43-9020A)
	Knob	5B-18244-56	Vert. Hold, Brightness, (Models 43-9021A)
	Knob	5B-18382-36	Ant.

DISASSEMBLY INSTRUCTIONS

1. Remove 2 wood screws and back cover.
2. Remove 7 push-on type control knobs.
3. Disconnect TV built-in antenna, AM antenna, speaker, yoke plug and picture tube.
4. Remove speaker mounting nuts. Remove speaker.
5. Remove 5 chassis bolts. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

TUNING GANG FULLY CLOSED



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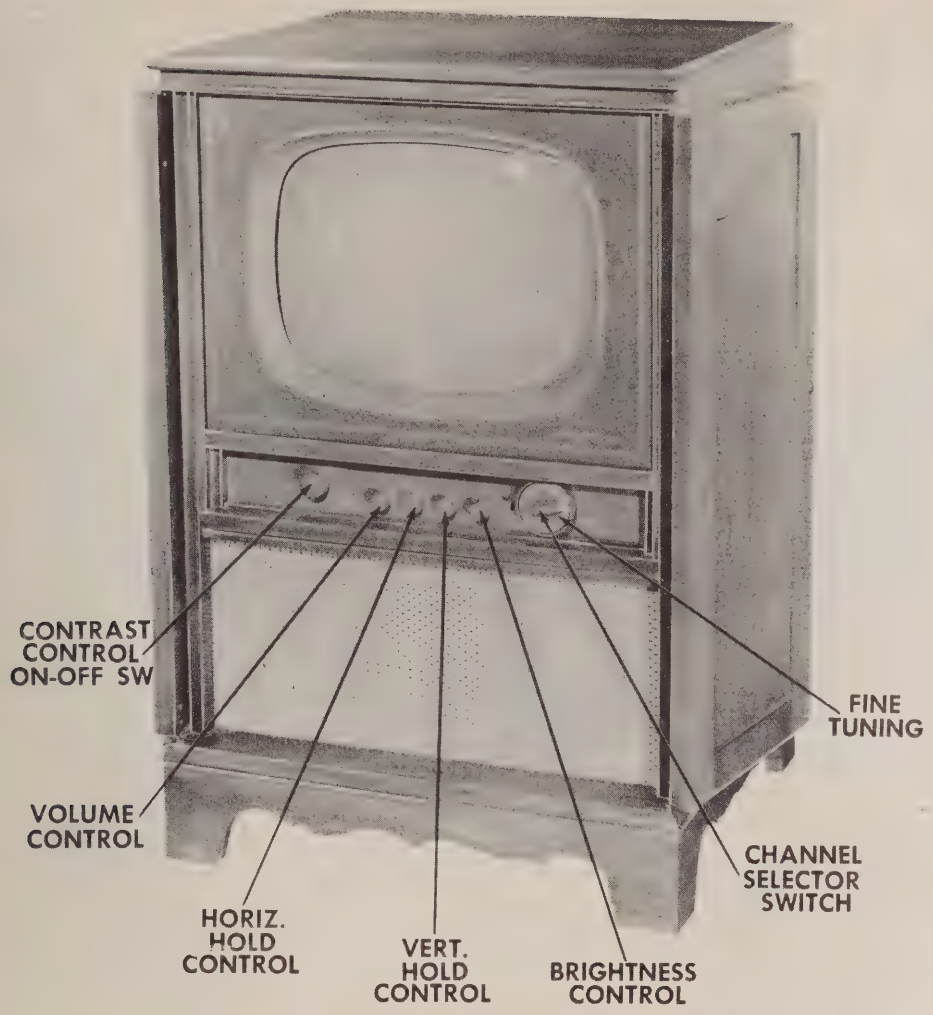

MAGNAVOX CHASSIS CT303

TRADE NAME	Magnavox Models 104 Series (Ch. CT301 thru CT 314)
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.85 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

INDEX

Alignment Instructions 6
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 7
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Photos (Cont.)
Chassis - Top View 3
RF Tuner 10
Resistor and Inductor Identification 15, 16
Resistance Measurements 8
Schematic 2
Tube Placement Charts 5

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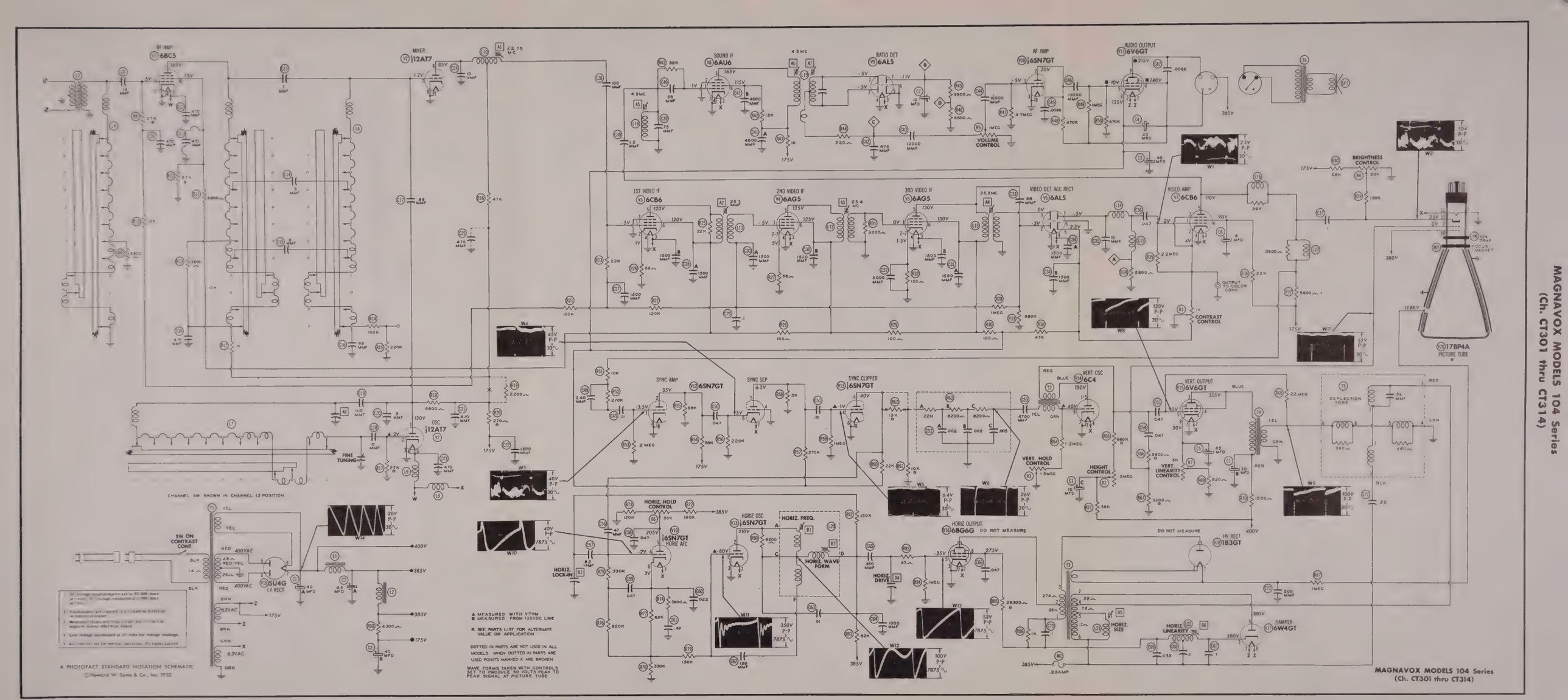
MAGNAVOX MODELS 104 Series
(Ch. CT301 thru CT314)
RF AMP V1 6BC5
MIXER V2 12AT7
SOUND IF V6 6AU6
RATIO DET V9 6AL5
AF AMP V10 6SN7GT
AUDIO OUTPUT V11 6V6GT
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6AG5
3RD VIDEO IF V5 6AG5
VIDEO DET AGC RECT V6 6AL5
VIDEO AMP V7 6CB6
OSC V7 12AT7
SYNC AMP V12 6SN7GT
SYNC SEP
SYNC CLIPPER V13 6SN7GT
VERT OSC V14 6C4
VERT OUTPUT V15 6V6GT
HORIZ OSC V13 6SN7GT
HORIZ AFC V16 6SN7GT
HORIZ OUTPUT V18 6BG6G
HV RECT V18 1B3GT
DAMPER V17 6W4GT
PICTURE TUBE V10 17BP4A
LV RECT V19 5U4G
VOLUME CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
HORIZ. SIZE
HORIZ. LINEARITY
HORIZ. HOLD CONTROL
HORIZ. LOCK-IN
HORIZ. FREQ.
HORIZ. WAVE FORM
HORIZ. DRIVE
FINE TUNING
SW ON CONTRAST CONT
DEFLECTION YOKE
ION TRAP FOCUS MAGNET
CHANNEL SW SHOWN IN CHANNEL 13 POSITION
DO NOT MEASURE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MAGNAVOX MODELS 104 Series
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CHASSIS TOP VIEW

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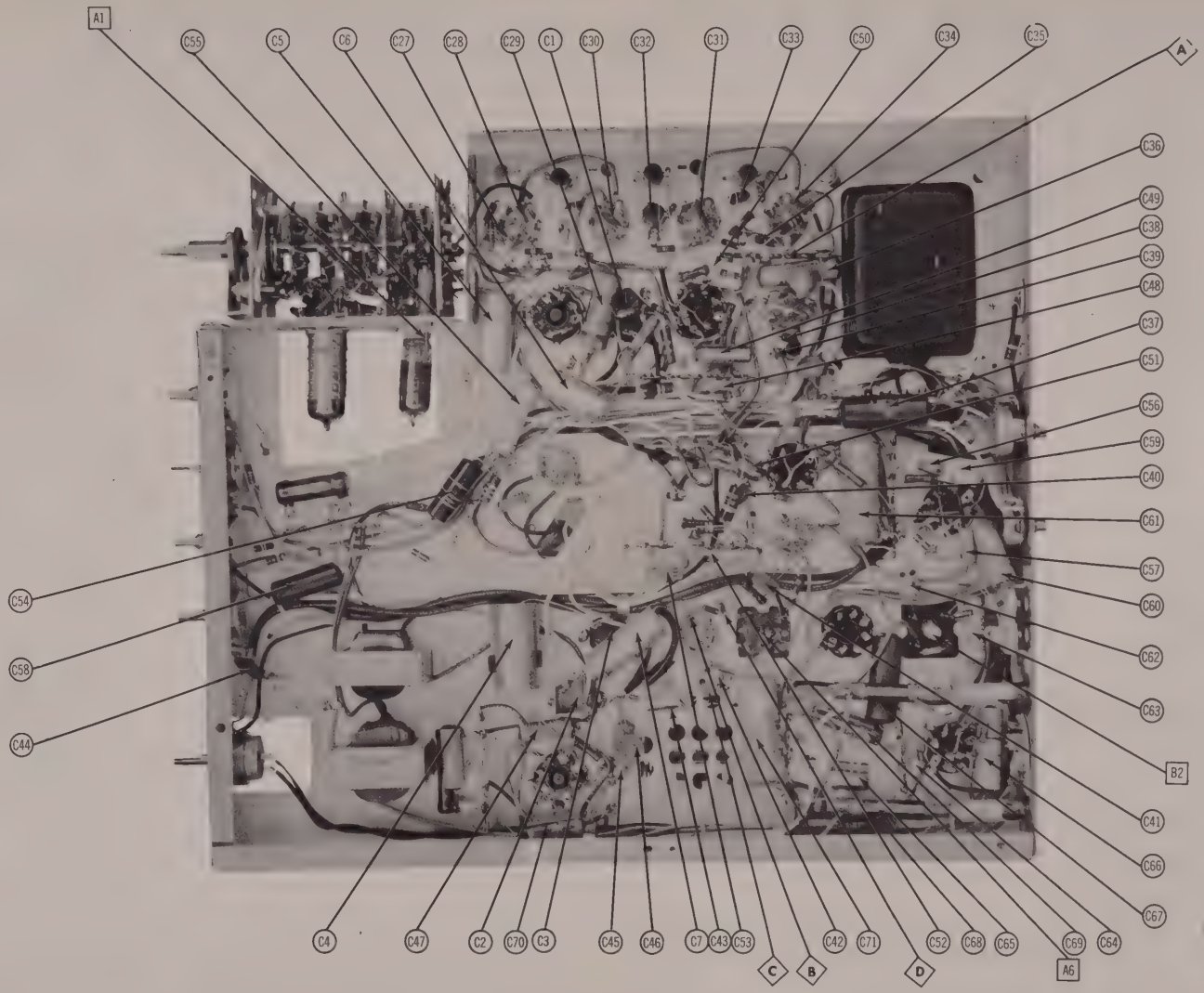
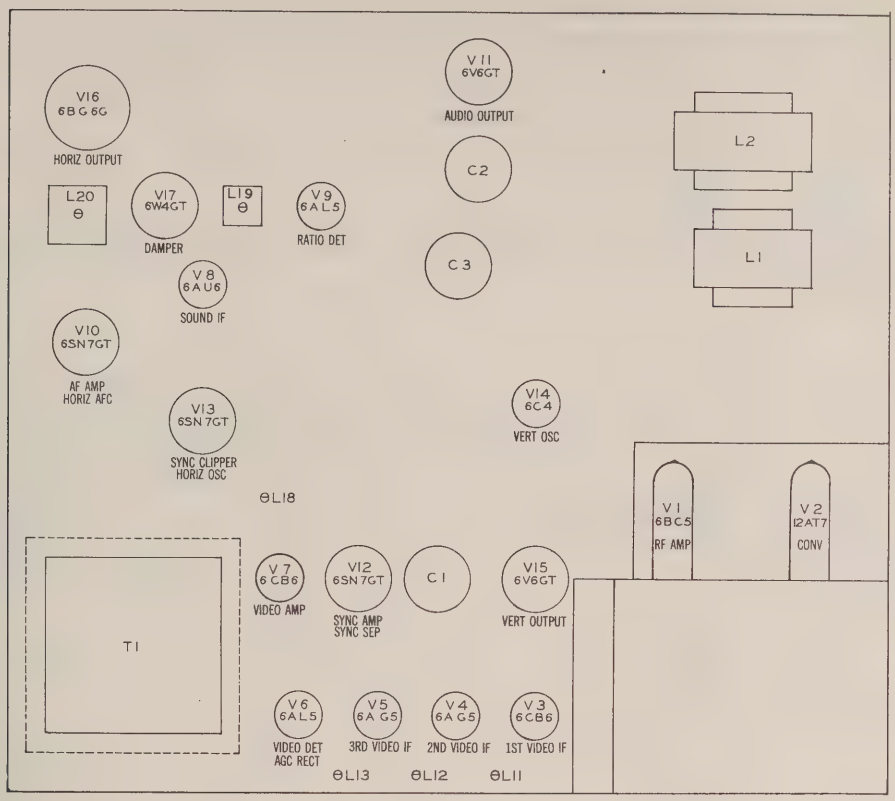
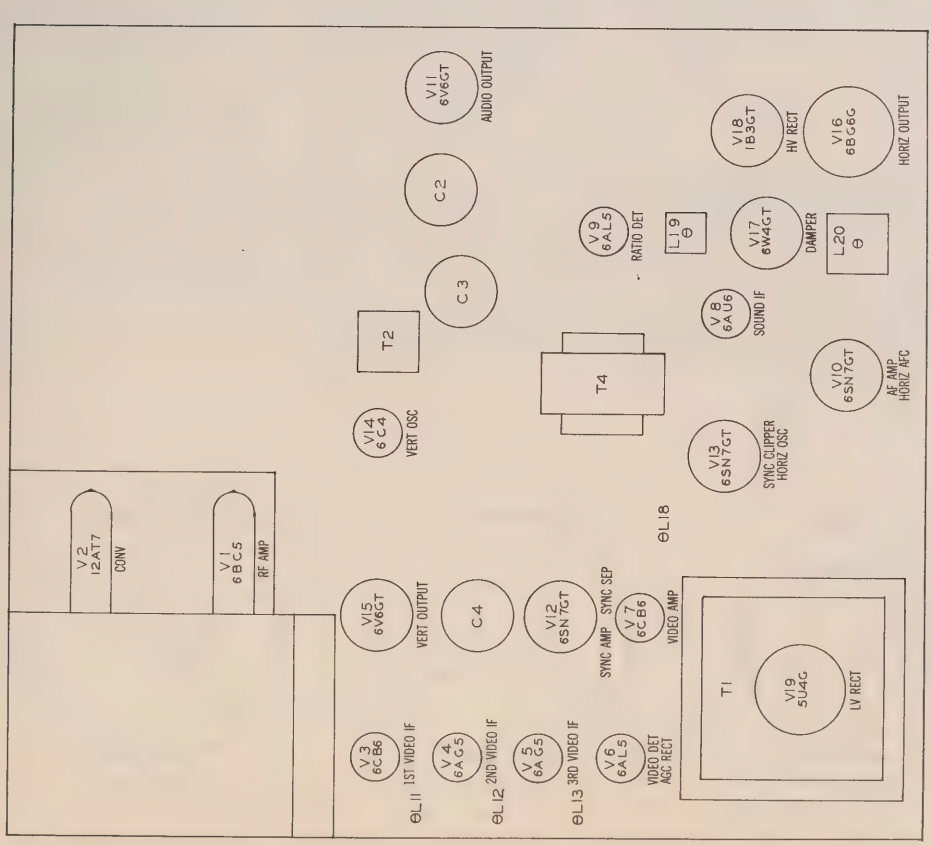


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded lead of C29, connect the positive lead to chassis.
Turn the channel switch to a channel which causes no interference. To check for interference turn the fine tuning control. If the VTVM reading changes switch to another channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube, (V2) Low side to chassis.	22.75MC (unmod)	See note above.	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	25.3MC	"	"	A2	"
3.	"	"	23.4MC	"	"	A3	"
4.	"	"	25.5MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Turn the channel switch to a channel which causes no interference. To check for interference turn the fine tuning control. If the response curve changes switch to another channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over converter tube, (V2) Low side to chassis.	24MC (10MC Swp)	21.25MC 22.75MC 25.75MC	See note above.	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to fig.1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1, (grid), of 6CB6, (V7). Low side to chassis.	4.5MC (unmod)	Any channel not used locally.	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120 sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 1, (grid) of 6CB6, (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any channel not used locally.	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizor capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A7	Reconnect capacitor C7. Adjust A7 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness fo crossover lines.

OSCILLATOR ALIGNMENT

There is only one adjustment in the oscillator circuit, (A8),
This adjustment is an overall oscillator adjustment and should not require adjustment except possibly when the converter tube is replaced.
The adjustment of A8 on any channel, (preferably a high channel), should cause the oscillator to be on the proper frequency for all channels.

RF AND MIXER ALIGNMENT

RF and mixer alignment is not recommended in the field.
If any channel appears to be badly out of alignment it may be corrected by altering the spacing and/or position of the coils for that channel.
It is essential that the highest channel be aligned first and progress towards the lowest.
Align only the channels on which the set is to operate.
The order of alignment should be: 1 antenna coils, (rear wafer), 2 RF coils, (second wafer from rear), 3 converter coils, (third wafer from rear). The front wafer contains the oscillator coils which should not be adjusted in the field.

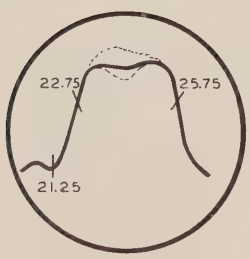


FIG.1

FIG. 2

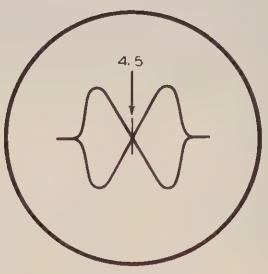


FIG. 3

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Connect a short across terminals C and D of L20.

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to fully clockwise.

Adjust the horizontal frequency slug, (B1), until the picture is out of sync. to the extent of one blanking bar in the picture as a single vertical bar.

At this point make the adjustments outlined under HORIZONTAL DRIVE, WIDTH, & LINEARITY ADJUSTMENTS. If the drive trimmer is changed a significant amount, repeat the adjustment of B1.

Turn the hold control counter-clockwise to approximately the center of its range.

Remove the short from L20.

Connect the vertical input of an oscilloscope through 15MMF to terminal C of L20.

Adjust the horizontal waveform slug, (B2), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 4. If during adjustment of B2 the picture falls out of sync. readjust B1 to synchronize the picture.

Remove the oscilloscope and turn the hold control to fully clockwise.

Readjust B1 until the blanking bar again appears in the picture.

Turn the hold control to fully counter-clockwise and interrupt the signal by switching to another channel and back again.

Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture synchronizes.

If less than 2 bars are present adjust the horizontal lock trimmer, (B3), slightly clockwise. If more than three bars are present adjust B3 slightly counter-clockwise.

Repeat the check and adjustment of B3 until 2 to 3 bars are present at the pull in point.

HORIZONTAL DRIVE, WIDTH, & LINEARITY ADJUSTMENTS

Turn the horizontal drive trimmer, (B4), counter-clockwise until compression begins to appear in the center of the picture, then clockwise just enough to remove the compression.

Adjust the horizontal size slug, (B5), until the picture is slightly wider than necessary to fill the mask.

Adjust the horizontal linearity slug, (B6), until the picture is symmetrical from left to right. There may be two positions on B6 which give best linearity. If so, use the one with the slug nearest fully in.

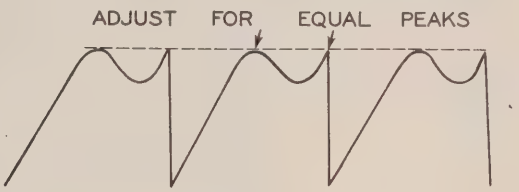
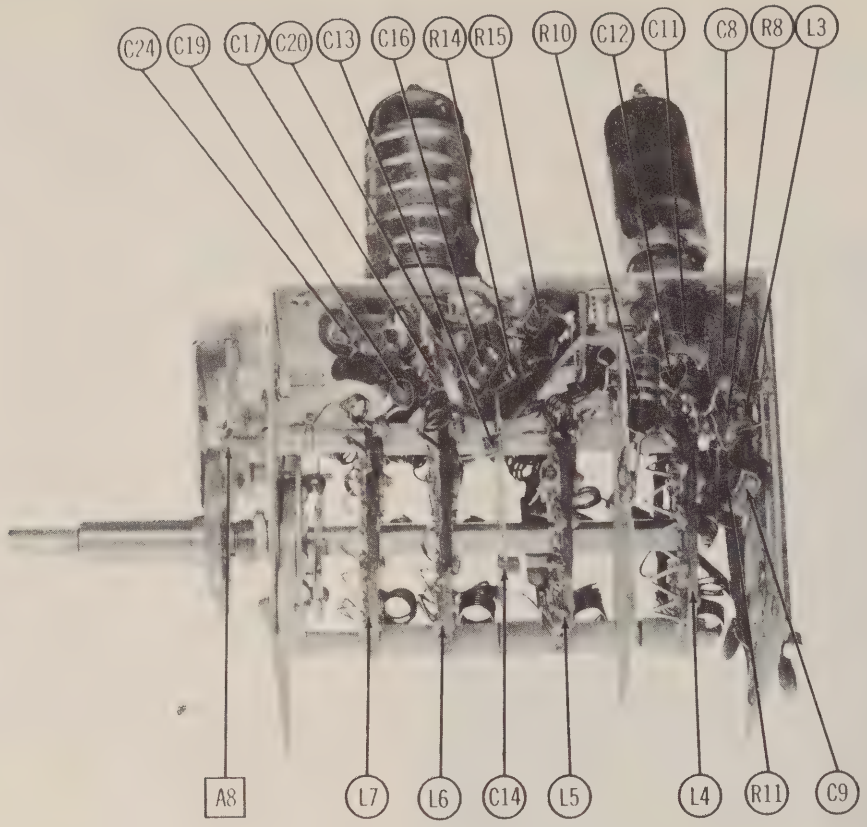


FIG. 4

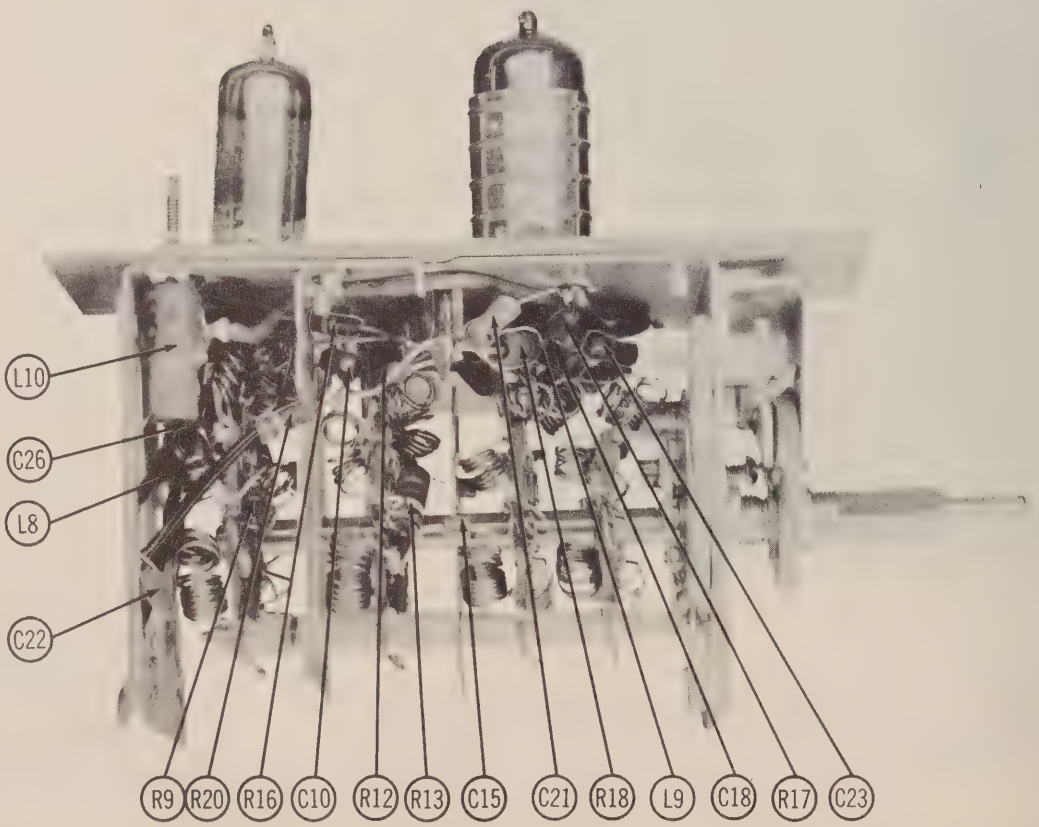
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.9Meg	0Ω	.2Ω	0Ω	†5.8KΩ	■6KΩ	0Ω		
V 2	12AT7	†11KΩ	27KΩ	0Ω	.3Ω	.3Ω	†51KΩ	320KΩ	0Ω	0Ω
V 3	6CB6	1.8Meg	68Ω	.1Ω	0Ω	■300Ω	■300Ω	0Ω		
V 4	6AG5	1.7Meg	68Ω	.1Ω	0Ω	■200Ω	■200Ω	68Ω		
V 5	6AG5	.4Ω	150Ω	.1Ω	0Ω	■100Ω	■100Ω	150Ω		
V 6	6AL5	.4Ω	680KΩ	0Ω	.1Ω	700Ω	0Ω	5.6KΩ		
V 7	6CB6	2.2Meg	300Ω	.1Ω	0Ω	†10KΩ	†26KΩ	300Ω		
V 8	6AU6	39KΩ	0Ω	.1Ω	0Ω	†5.3KΩ	†20KΩ	0Ω		
V 9	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	13KΩ		
V 10	6SN7GT	4.7Meg	†470KΩ	0Ω	1.5Meg	†70KΩ	410KΩ	.1Ω	0Ω	
V 11	6V6GT	0Ω	¶0Ω	†670Ω	†113Ω	340KΩ	#1KΩ	¶.2Ω	11KΩ	
V 12	6SN7GT	2.2Meg	32KΩ	0Ω	0Ω	12KΩ	220KΩ	.1Ω	0Ω	
V 13	6SN7GT	480KΩ	†82KΩ	0Ω	1Meg	14KΩ	0Ω	.1Ω	0Ω	
V 14	6C4	†1.8Meg	0Ω	0Ω	.1Ω	†1.8Meg	1.9Meg	0Ω		
V 15	6V6GT	0Ω	0Ω	†2.3KΩ	†2.3KΩ	2.2Meg	12Ω	.1Ω	1.6KΩ	
V 16	6BG6G	1Meg	.1Ω	0Ω	INF	1Meg	INF	0Ω	#28KΩ	Top Cap #1KΩ
V 17	6W4GT	INF	INF	INF	INF	†70Ω	INF	¶0Ω	¶.2Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #1.3KΩ
V 19	5U4G	0Ω	45KΩ	0Ω	26Ω	0Ω	28Ω	0Ω	45KΩ	
V 20	17BP4A	0Ω	3.3KΩ	Pin 10 †113Ω	Pin 11 160KΩ	Pin 12 .1Ω				

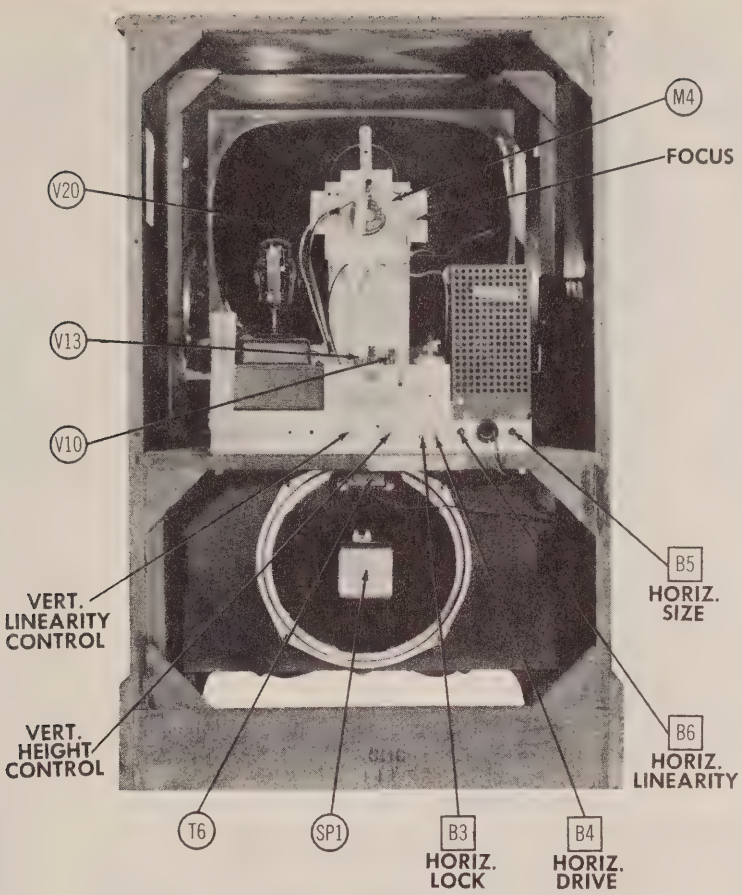
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V19
# MEASURED FROM PIN 3 OF V17
¶ MEASURED FROM 175VDC LINE
■ MEASURED FROM 135VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push-on type control knobs from front panel.
2. Remove 11 wood screws holding rear cover. Remove cover.
3. Disconnect speaker plug from rear of chassis.
4. Remove 6 chassis bolts and remove chassis.
5. Remove 5 speaker mounting nuts. Remove speaker.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PROPERTY OF
L. F. BLANKENSHIP
3004 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BC5	6BC5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4A	2nd Video IF Amp.	6AG5	6AG5	7BD	
B	2nd Video IF Amp.	6BC5	6BC5	7BD	
V5A	3rd Video IF Amp.	6AG5	6AG5	7BD	
B	3rd Video IF Amp.	6BC5	6BC5	7BD	
V6	Video Det. -AGC Rect.	6AL5	6AL5	6BT	
V7	Video Amp.	6CB6	6CB6	7CM	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp. -Horiz. AFC	6SN7GT	6SN7GT	8BD	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Sync. Amp. - Sync. Sep.	6SN7GT	6SN7GT	8BD	
V13	Sync. Clipper - Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V14	Vert. Osc.	6C4	6C4	6BG	
V15	Vert. Output	6V6GT	6V6GT	7AC	
V16	Horiz. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rect.	1B3GT	1B3GT	3C	
V19	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MAGNAVOX PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V20A	17BP4A	17BP4A	17BP4A	12D	
B	17BP4	17BP4	17BP4	12D	
C	16TP4	16TP4	16KP4	12D	
D	19AP4	19AP4	19BP4	12D	
E	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	27002IG42	AFH3-54		UPT44150		TVL-4840	▪ Filter
B	30	475							▪ Vert. Output Dec.
C	10	475							▲ Vert. Osc. Dec.
C2A	45	475	27002IG39	AFH2-72		UPT44450		TVL-2830	▲ Filter
B	40	475							▲ Decoupling
C3	40	250	270023G15	AFH-29		UP4025		TVL-1519	Decoupling
C4	35	300	270027G16	PRS450/40		BR3035A		TVA-1610	Audio Output Dec.
C5	65	50	270027G17	PRS50/700		BRH50L		TVA-1310	Vert. Output Cathode
C6	4	400	270027G14	PRS450/4		BR445		TVA-1702	Video Amp. Screen
C7	10	50	270027G4	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C8	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C9	470			SI470	D6-471		GP2K-471	5GA-T47	AGC Filter
C10	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Plate
C11	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Screen
C12	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Fil.
C13	.68				TCZ-.68		NP0K-R68		RF Coupling
C14	.5						NP0K-R50		RF Coupling
C15	.8						NP0K-R80		RF Coupling
C16	68			SI68	D6-680		GP1K-680	5GA-Q68	Mixer Grid Cap.
C17	.68				TCZ-.68		NP0K-R68		Osc. Coupling
C18	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C19	100			SI100	D6-101		GP1K-101	5GA-T1	Osc. Feedback
C20	3						N750K-030		Fixed Trimmer
C21	470			SI470	D6-471		GP2K-471	5GA-T47	RF Bypass
C22	1500		250175G3	BPD-0015	DD-152		801-0015	5HK-D15	RF Bypass
C23	470			SI470	D6-471		GP2K-471	5GA-T47	Conv. Fil.
C24	10			SI10	D6-100		GP1K-100	5GA-Q1	Fixed Trimmer
C25	470			SI470	D6-471		GP2K-471	5GA-T47	RF Bypass
C26	100			SI100	D6-101		GP1K-101	5GA-T1	IF Coupling
C27	1500		250175G3	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C28A	1500		250195G1	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	1st Video IF Dec.
B	1500					1W5D15			1st Video IF Fil.
C29	.1	±20	250205G13	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C30A	1500		250195G1	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			2nd Video IF Dec.
C31A	1500		250195G1	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	3rd Video IF Dec.
B	1500					1W5D15			3rd Video IF Fil.
C32	5000		250175G1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd Video IF Cathode
C33	68		250207G13	SI68	D6-680		GP1K-680	5GA-Q68	IF Coupling
C34A	1500		250185G1	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	Video Det. Fil.
B	1500					1W5D15			RF Bypass
C35	10		250207G3	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Video Det. Filter
C36	.047	200	250205G11	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C37	.1	600	250203G13	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C38	1.5		250164G10	SI1.5NP0	TCZ-1.5		NP0K-1R5		Sound IF Coupling
C39	75	±20	250187G19	1469-000075					Fixed Trimmer
C40	56		250187G50		TCZ-56		NP0-333-560		Sound IF Grid
C41A	4000		250185G2	BPD-2X004	DD-2-402	1D5D4	822-004	5HK-2D4	Sound IF Plate
B	4000				DD-2-402	1D5D4			Sound IF Screen
C43	470	500	250159G90	1468-0005	DD-471	5W5T5	GP2K-471	1PM-35	De-emphasis
C43	10000		250175G2	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C44	10000		250175G2	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C45	.0068	600	250203G6	P288-0068	D6-682		GP2-333-682	6TM-D68	AF Amp. Plate

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	10000		250175G2	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C47	.0068	600	250203 G6	P688-0068	D6-682		GP2-333-682	6TM-D68	Audio Output Plate
C48	240	500	250159G56	1468-00025	D6-251	5W5T25	GP2K-241	1FM-325	Sync. Coupling
C49	.01	600	250203G7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C50	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-D47	Sync. Coupling
C51	.01	600	250203G7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C52A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		#250186G1	P688-005	#PC-100	PTE6D5	GP2-333-502	#101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C53	4700	500	250161G24	1464-005		1R5D5		MS-25	Vert. Osc. Grid Cap.
C54	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Discharge
C55	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Sweep Coupling
C56	47	500	250187G49	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Horiz. Sync. Coupling
C57	82	500	250159G81						Horiz. Feedback
C58	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. AFC Plate
C59	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. AFC Filter
C60	.022	600	250203G9	P688-022	DF-203	PTE6S2		6TM-S22	Horiz. AFC Filter
C61	.47	200	250205G17	P288-47		GT2P5		2TM-P47	Horiz. AFC Filter
C62	180	500	250159G53	1460-0002		5R5T2		MS-32	Horiz. Osc. Grid Cap.
C63	.01	600	250161G47	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C64	1000	500	250160G64	1484-001		1R5D1		MS-31	Horiz. Discharge
C65	560	500	250159G30					MS-38	Horiz. Sweep Coupling
C66	.047	600	250203G11	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C67	.1	600	250203G13	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C68	.1	600	250203G13	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C69	.033	600	250203G10	P688-033					Damper Filter
C70	.1	200	250205G13	P288-1	DF-104	PTE4P1		2TM-P1	Decoupling
C71	.22	600	250204G15	684-25			GP6P25	6TM-P25	Horiz. Sweep Coupling
C72	500	20000	250185G1	HV20C	TV3-502				HV Filter

CONTROLS

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1000Ω	½	D220128G3	QU-108	AM-8-S	B-5-S	Contrast Control & Sw.
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2A	1.5Meg	½	D220076G28	QU-138	AG-85-S		Height Control
B	Shaft		Not Req.	Not Req.	FK3-1/4		Attach to R2A per instructions
R3A	1.5Meg	½	D220076G37	QU-138	AG-85-S		Vertical Hold Control
B	Shaft		Not Req.	Not Req.	FS-3		Attach to R3A per instructions
R4A	50KΩ	½	D220076G44	QU-123	AM-44-S	B-31	Brightness Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R4A per instructions
R5A	1Meg	½	D220076G19	QU-137	AG-83-Z	B-70	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R5A per instructions
R6A	50KΩ	½	D220076G44	QU-123	AM-44-S	B-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R6A per instructions
R7A	5000Ω	3	D220079G30		56-5000	YK-135	Vertical Linearity Control - Wire Wound
B	Shaft		Not Req.		Not Req.	Not Req.	Attach to R7A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	27KΩ	½		BTS-27K	RF Grid See note 1.
R9	3300Ω	½		BTS-3300	Antenna Coil Shunt
R10	27KΩ	1			Bleeder See note 2.
R11	6800Ω	½			RF Screen
R12	1000Ω 5%	½		BTS-1000 5%	RF Plate
R13	3900Ω	½		BTA-3900	RF Coil Shunt
R14	100KΩ	½			Mixer Grid
R15	220KΩ 20%	½			Mixer Grid
R16	47KΩ 5%	½			Mixer Plate
R17	27KΩ	½			Osc. Grid See note 3.
R18	6800Ω	½			Osc. Plate
R19	2200Ω	½		BTS-2200	Decoupling
R20	270Ω 20%	½		BTS-270	Decoupling See note 4 & 5
R21	100KΩ	½	230104G86		AGC Network
R22	100KΩ	½	230104G87		AGC Network
R23	22KΩ	½	230104G78		1st Video IF Amp. Grid
R24	68Ω 20%	½	230104G48		1st Video IF Amp. Cathode
R25	22KΩ	½	230104G78		2nd Video IF Amp. Coil Shunt
R26	100Ω 5%	½	230104G50	BTS-100 5%	Decoupling
R27	68Ω 20%	½	230104G48		2nd Video IF Amp. Cathode
R28	1Meg	½	230104G98		AGC Network
R29	100Ω 5%	½	230104G50	BTS-100 5%	Decoupling
R30	100Ω 5%	½	230104G50	BTS-100 5%	Decoupling
R31	3300Ω	½	230104G68	BTS-3300	3rd Video IF Amp. Coil Shunt
R32	150Ω	½	230104G52	BTS-150	3rd Video IF Amp. Cathode
R33	680KΩ	½	230104G96		AGC Diode Load
R34	5600Ω	½	230104G71	BTS-5600	Video Det. Diode Load
R35	2.2Meg	½	230104G102	BTS-2.2Meg	Video Amp. Grid
R36	22KΩ	1	230105G78	BTA-22K	Video Amp. Screen
R37	5600Ω	2	230105G71	BTB-5600	Video Amp. Plate
R38	47KΩ	2	230105G82	BTA-47K	Voltage Divider
R39	150KΩ 20%	½	230104G88	BTS-150K	Picture Tube Cathode
R40	68KΩ	½	230104G84	BTS-68K	Voltage Divider
R41	39KΩ	½	230104G81		Sound IF Grid
R42	15KΩ	½	230104G76		Sound IF Screen
R43	1000Ω	½	230104G62	BTS-1000	Sound IF Decoupling
R44	220Ω	½	230104G54		Balancing
R45	6800Ω 5%	½	230094G179	BTS-6800 5%	Ratio Det. Diode Load
R46	6800Ω 5%	½	230094G179	BTS-6800 5%	Ratio Det. Diode Load
R47	4.7Meg	½	230104G106	BTS-4.7Meg	AF Amp. Grid
R48	470KΩ	½	230104G94	BTS-470K	AF Amp. Plate
R49	1Meg 5%	½	230094G31	BTS-1Meg 5%	Voltage Divider
R50	470KΩ	½	230094G223	BTS-470K 5%	Audio Output Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES
R51	10KΩ 20%	½	230104G74	BTS-10K	Isolation
R52	270KΩ 20%	½	230104G91	BTS-270K	Isolation
R53	2.2Meg	½	230104G102	BTS-2.2Meg	Sync. Amp. Grid
R54	68KΩ 20%	1	230105G84	BTA-68K	Sync. Amp. Plate
R55	68KΩ	½	230104G84	BTS-68K	Voltage Divider
R56	220KΩ	½	230104G90	BTS-220K	Sync. Sep. Cathode
R57	270KΩ 20%	½	230104G91	BTS-270K	Sync. Sep. Plate
R58	15KΩ	½	230104G76	BTS-15K	Voltage Divider
R59	1Meg	½	230104G98	BTS-1Meg	Sync. Clipper Grid
R60	22KΩ	1	230105G78	BTA-22K	Sync. Clipper Plate
R61	10KΩ	½	230104G74	BTS-10K	Voltage Divider See note 6
R62	15KΩ	½	230104G76	BTS-15K	Integrator Net. See note 5
R63A	22KΩ	1	230105G1	BTA-22K	Integrator Network
B	8200Ω	½	250188G1	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R64	1.2Meg	1	230104G99	BTA-1.2Meg	Vert. Osc. Grid
R65	680KΩ	1	230094G177	BTA-680K	Vert. Osc. Plate See note 7
R66	5800Ω	½	230104G70	BTS-5800	Vert. Peaking See note 8
R67	3300Ω	½	230104G68	BTS-3300	Vert. Peaking See note 8
R68	2.2Meg	½	230104G102	BTS-2.2Meg	Vert. Output Grid
R69	820Ω	1	230105G61	BTA-820	Vert. Output Cathode
R70	1500Ω	2	230105G64	BTB-1500	Vert. Output Decoupling
R71	56KΩ	½	230104G83	BTS-56K	Vert. Osc.Decoupling
R72	100KΩ	½	230104G86	BTS-100K	Voltage Divider
R73	120KΩ	½	230104G87	BTS-120K	Voltage Divider
R74	3900Ω	½	230104G69	BTS-3900	Horiz. AFC Filter
R75	330KΩ	½	230104G92	BTS-330K	Horiz. AFC Grid
R76	820KΩ	½	230104G97	BTS-820K	Horiz. AFC Grid
R77	82KΩ	½	230104G85	BTS-82K	Horiz. AFC Cathode
R78	330KΩ	½	230104G92	BTS-330K	Horiz. AFC Cathode
R79	150KΩ	½	230104G88	BTS-150K	Horiz. Osc. Grid
R80	8200Ω	½	230104G73	BTS-8200	Horiz. Osc. Coil Shunt
R81	82KΩ	1	230105G85	BTA-82K	Horiz. Osc. Plate
R82	150KΩ	½	230104G88	BTS-150K	Horiz. AFC Feedback
R83	47Ω	½	230104G46		Parasitic Suppressor
R84	1Meg	1	230104G98	BTS-1Meg	Horiz. Output Grid
R85	28,300Ω	5	240057G3		Horiz. Output Screen Wire Wound See note 10
R86	1000Ω	10	240021G32	1 3/4A-1000	Current Limiting Wire Wound
R87	1Meg	1	230105G98		HV Filter
R88	4300Ω	15	240021G23	2D-4500	Voltage Divider Wire Wound

Note 1. Some models use a 22KΩ resistor in this application.
Note 2. Some models use a 15KΩ resistor in this application.
Note 3. Some models use a 22KΩ resistor in this application.
Note 4. Some models use a 150Ω resistor in this application.
Note 5. Not used in all models.
Note 6. Some models use a 39KΩ resistor in this application.
Note 7. Some models use a 470KΩ resistor in this application.
Note 8. Some models use a 4700Ω resistor in this application.
Note 9. Some models use a n 180Ω resistor in this application.
Note 10. Some models use an alternate part #240021G21.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAGNAVOX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	720VCT	5VAC	6.3VAC	[illegible]		P-3069 ①	
	② 1.85A	.215ADC	③ 3A	& 6.7A				
				Sec. 4				
				6.3VAC & 1.65A				

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MAGNAVOX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	950Ω	320030-6	A-8122	A 4003	TBO-3	Vert. Oscillator Trans.
T3	310Ω	10.5Ω	320055-1		HVO-7 ②		Horiz. Output Trans.
	Tapped ② 36Ω	Tapped ②, 70 & 8.3Ω			MWC-1		
		Sec. 2 0Ω					
T4	820Ω	12Ω	320058G5	A-8112	A-3036	TSO-5 ③	Vert. Output Trans.
T5A	12.5Ω		360462G1	DY-8	MDF-70		Horiz. Deflection Coils
T5B	470						Vert. Deflection Coils

② Replace width coil with MWC-1
③ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAGNAVOX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	5KΩ	3.8Ω	580Ω	.6Ω		A-3877 ④	A-3019 ④	RO-8 ④	④ Use mounting slots provided.

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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MAGNAVOX PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.8Ω	583587	12J12	12A31	
	CONE DIA.	V. C. DIA.				
SP1B	12"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↺)	MAGNAVOX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200ADC	58Ω	1 Henry	320041G4	C-2327	C-2974 ⑤	TR-4200 ⑤	⑤ Mount on Top of Chassis.
L2	.100ADC	55Ω	1.4Henry	320041G5	C-2327	C-2974 ⑤		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MAGNAVOX PART No.	MERIT PART No.	IRC PART No.	
L3	Ant. Trans.	.2Ω	.1Ω				Tap at .1Ω
L4	Ant. Coils	0Ω					
L5	RF Coils	0Ω					
L6	Mixer ,Grid Coils	0Ω					
L7	Osc. Coils	0Ω					
L8	Fil. Choke	.22Ω				CLA	.47 Microhenries
L9	Fil. Choke	.22Ω				CLA	.47 Microhenries
L10	1st. Video IF	.6Ω					Tap at .4Ω
L11	2nd. Video IF	.4Ω	.4Ω	360461G1			
L12	3rd. Video IF	.4Ω	.4Ω	360461G1			
L13	4th. Video IF	.4Ω	.4Ω	360461G1			
L14	Peaking Coil	5.5Ω		360443G1	TV-184		168 Microhenries
L15	Peaking Coil	9Ω		360443G2	TV-188		387 Microhenries
L16	Peaking Coil	9.2Ω		360443G13	TV-183		Wound on 39KΩ Resistor
L17	Peaking Coil	9.3Ω		360443G14	TV-184 ①		Wound on 5.6KΩ Resistor
L18	4.5MC Trap	.8Ω		360481G1	TV-151		
L19	Ratio Det. Trans.	3Ω	.2	360482G1	TV-110		Tap at.6Ω
L20	Horiz.Osc	70Ω	43Ω	360499G1	TV-162		
L21	Horiz.Size	1.1Ω		360357G1	MWC-2		
L22	Horiz.Lin.	9Ω		360358G1			Tap at 3.2Ω

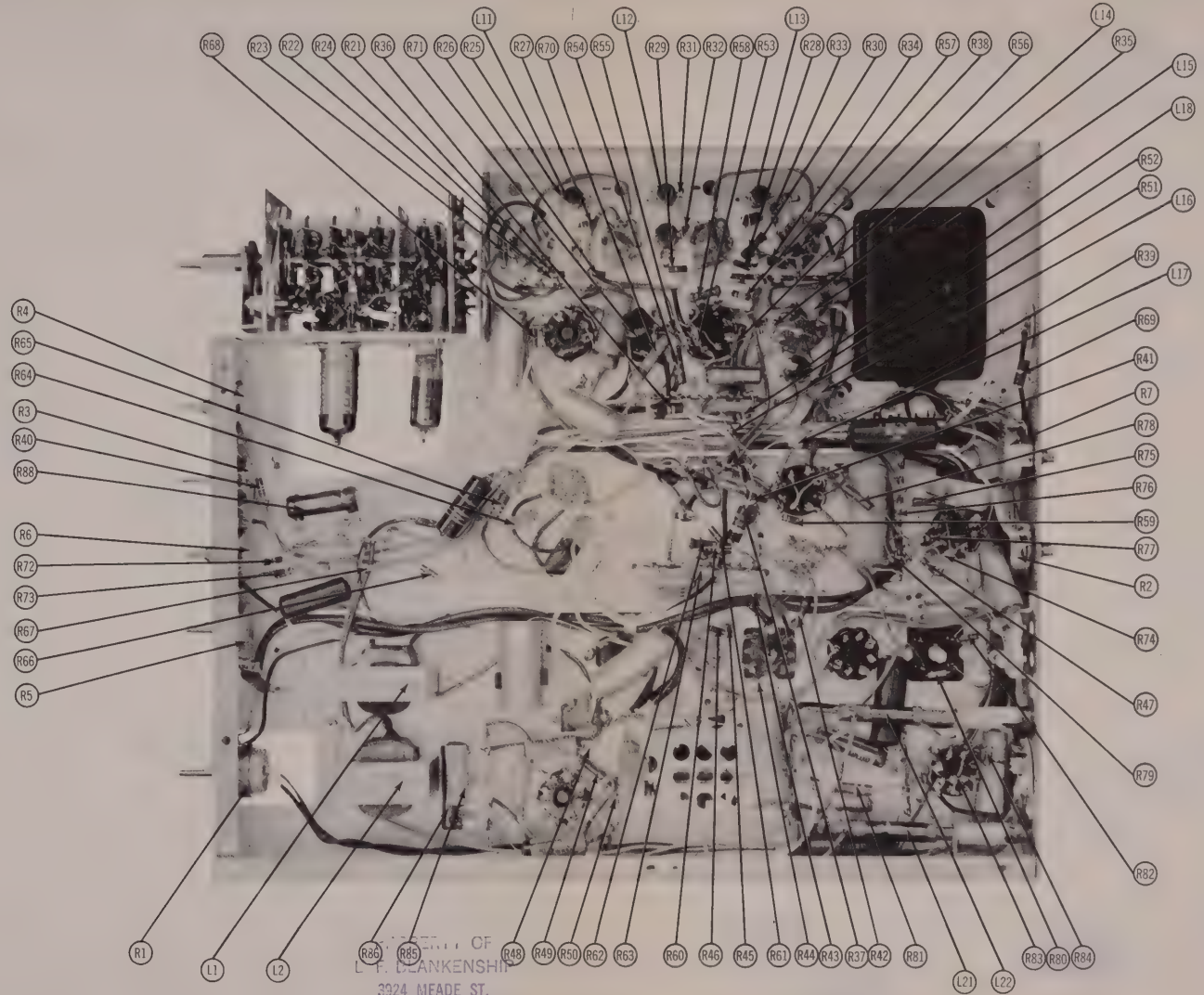
① Parallel with 5.6K Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MAGNAVOX PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	1/4A 250V	180475G1		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M2	RF Tuner	70035 4G2	
M3	Focus Magnet		
M4	Ion Trap		
B3, B4	Trimmer	260106G4	Dual Horiz. Drive and Horiz. Lock-in.



OF
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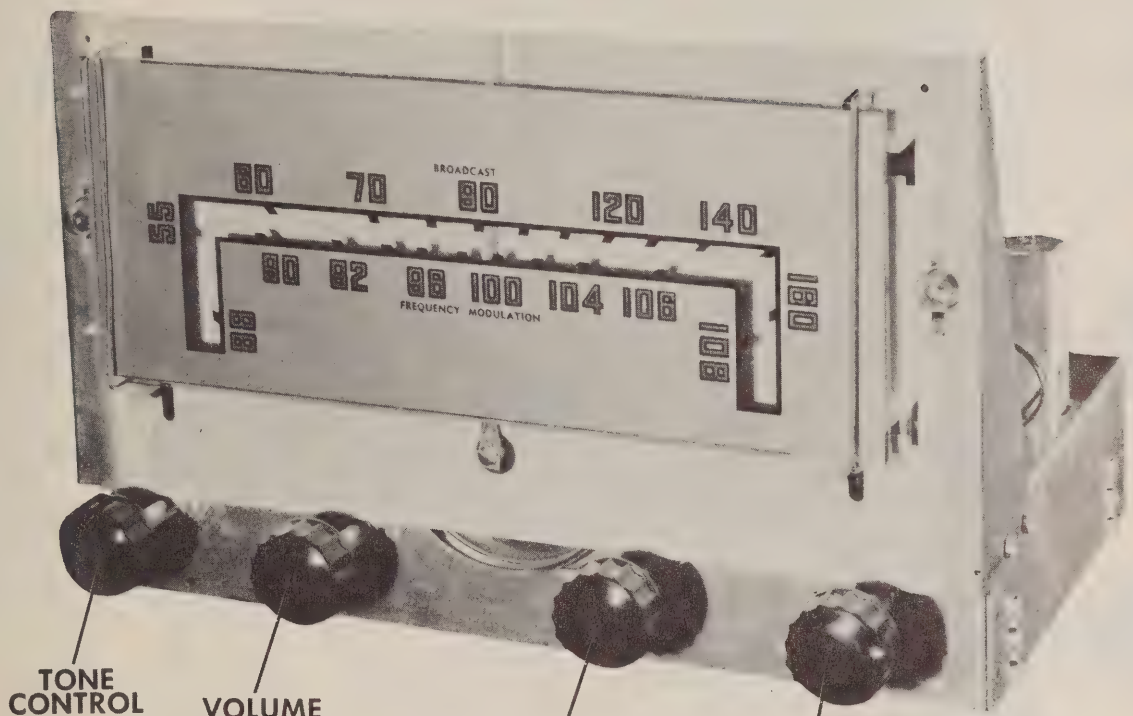
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MEISSNER
MODEL 8BT



MEISSNER
MODEL 8BT

TRADE NAME	Meissner, Model 8BT	
MANUFACTURER	Meissner Mfg., Div., Maguire Industries Inc., Mt. Carmel, Ill.	
TYPE SET	AC Operated AM-FM Superheterodyne Tuner Chassis.	
TUBES (EIGHT)	Types 6BA6 FM RF Amp., 12AT7 FM Conv., 6BE6 AM Conv., 6BA6 1st IF Amp, 6BA6 2nd FM IF Amp., 6AL5 Ratio Det., 6AT6 AM Det.-AVC-AF Amp., 5Y3GT Rectifier.	
POWER SUPPLY	110-120 Volts AC	RATING .47 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1620KC		FREQ. MOD. 88-108MC

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DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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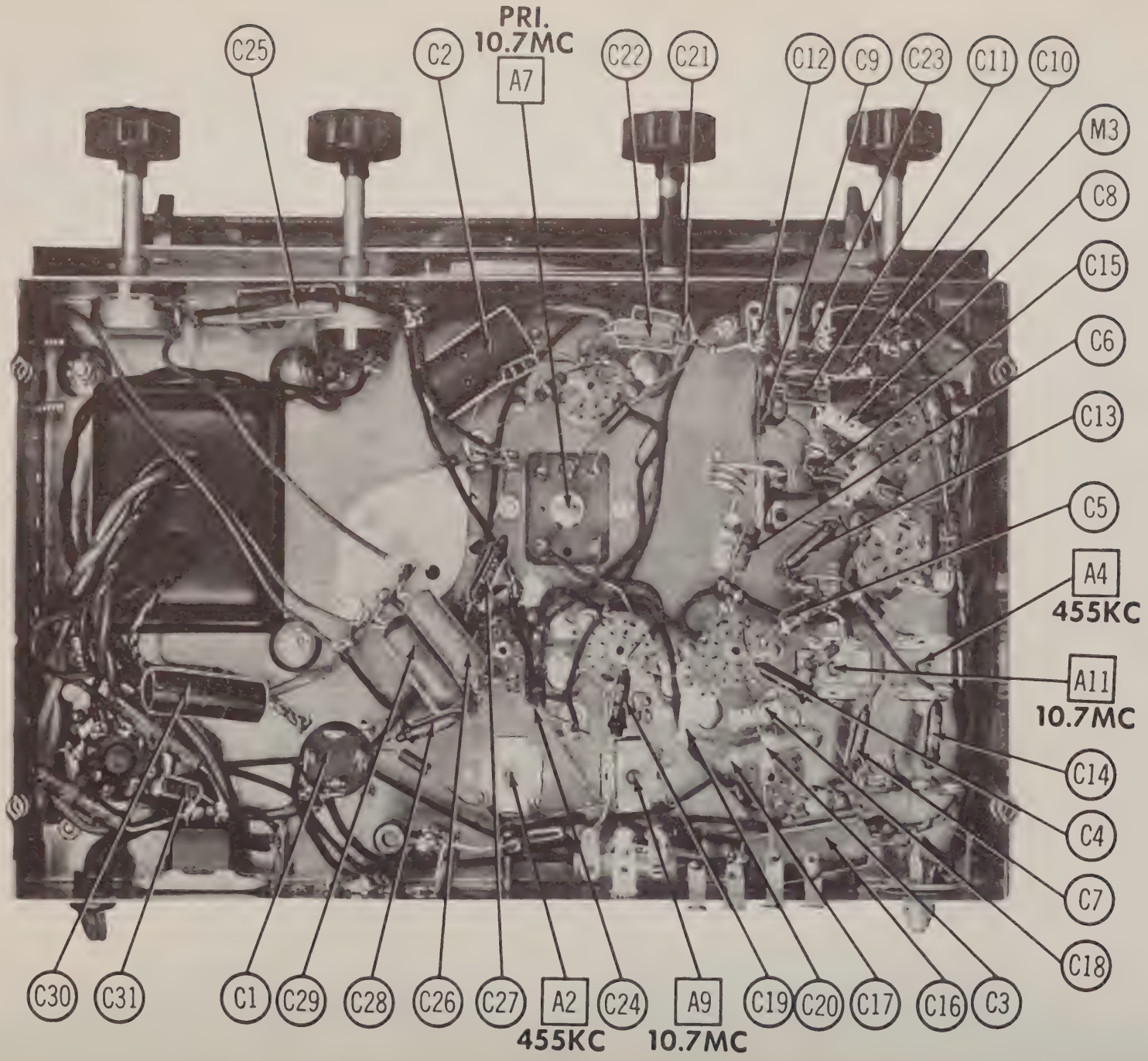
PRI.
10.7MC
C25
C2
A7
C22
C21
C12
C9
C23
C11
C10
M3
C8
C15
C6
C13
C5
A4
455KC
A11
10.7MC
C14
C4
C7
C18
C30
C31
C1
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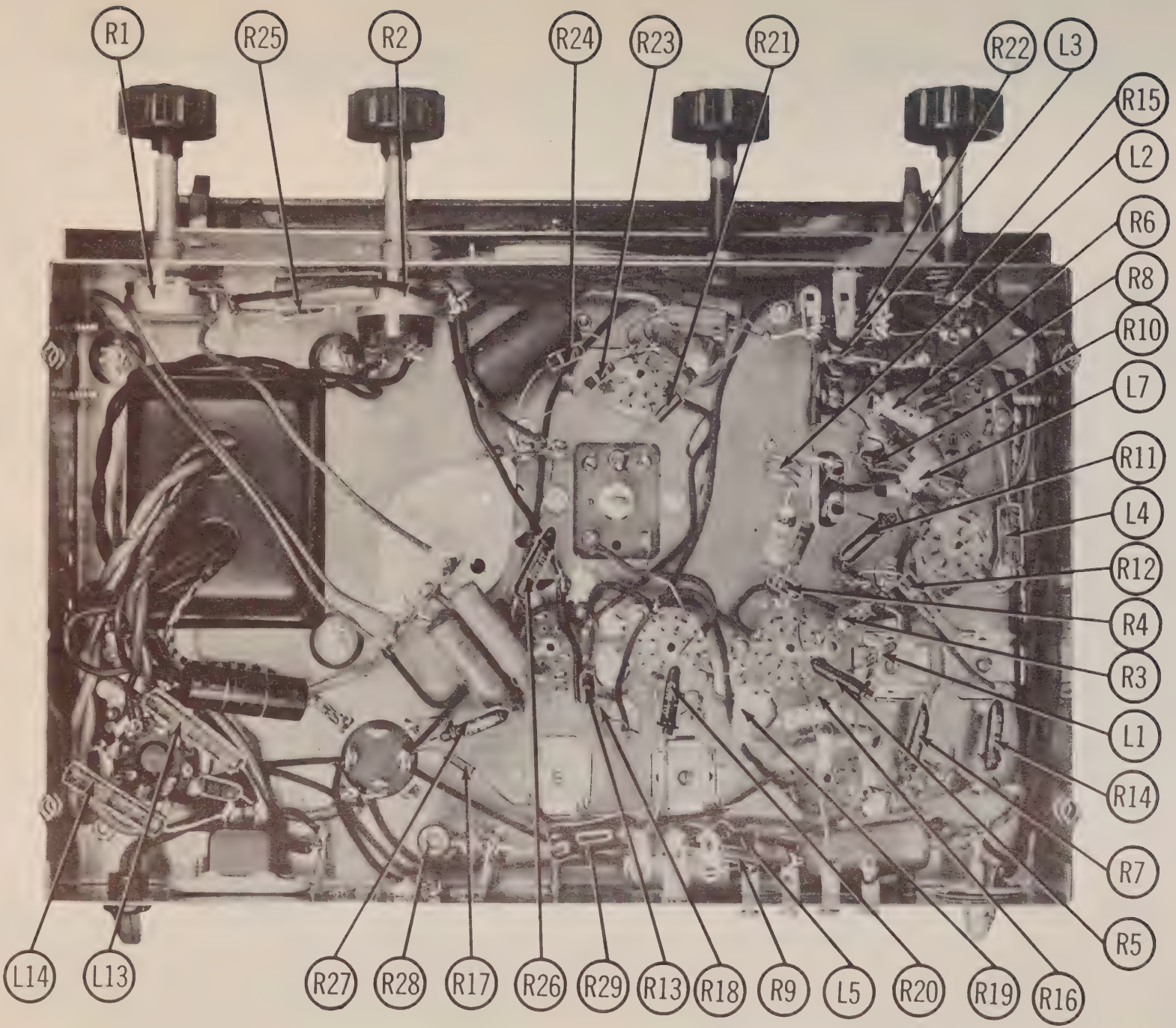
C20
C17
C16
C3


R1
R25
R2
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R23
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R22
L3
R15
L2
R6
R8
R10
L7
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R12
R4
R3
L1
R14
R7
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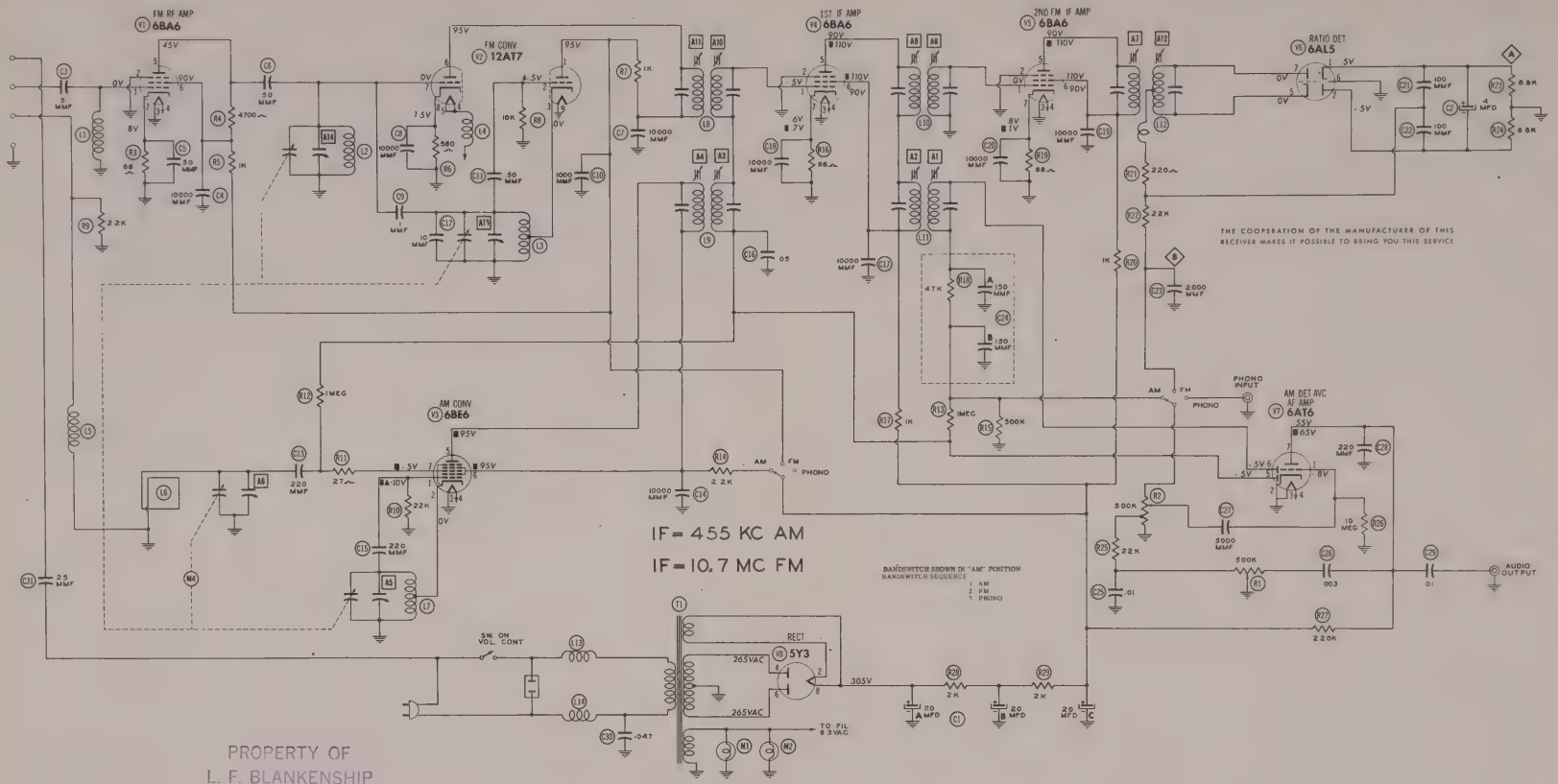
R19
R16



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ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† TAKEN FROM PIN 8 OF V8

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	.2Ω	0Ω	0Ω	.1Ω	†9.7KΩ	†5KΩ	68Ω		
V 2	12AT7	†4KΩ	10KΩ	0Ω	1Ω	1Ω	†5KΩ	0Ω	560Ω	0Ω
V 3	6BE6	22KΩ	.5Ω	0Ω	.1Ω	■†6.2KΩ	■†6.2KΩ	2.5Meg		
V 4	6BA6	1.5Meg	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	68Ω		
V 5	6BA6	.7Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	68Ω		
V 6	6AL5	6.8KΩ	6.8KΩ	0Ω	.1Ω	520KΩ	Inf.	520KΩ		
V 7	6AT6	10Meg	0Ω	0Ω	.1Ω	1.5Meg	550KΩ	†224KΩ		
V 8	5Y3GT	Inf.	80KΩ	Inf.	74Ω	Inf.	78Ω	Inf.	80KΩ	

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st. IF Amp.	6BA6	6BA6	7BK	
V5	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Det.	6AL5	6AL5	6BT	
V7	AF Amp.	6AT6	6AT6	7BT	
V8	Rect.	5Y3	5Y3	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

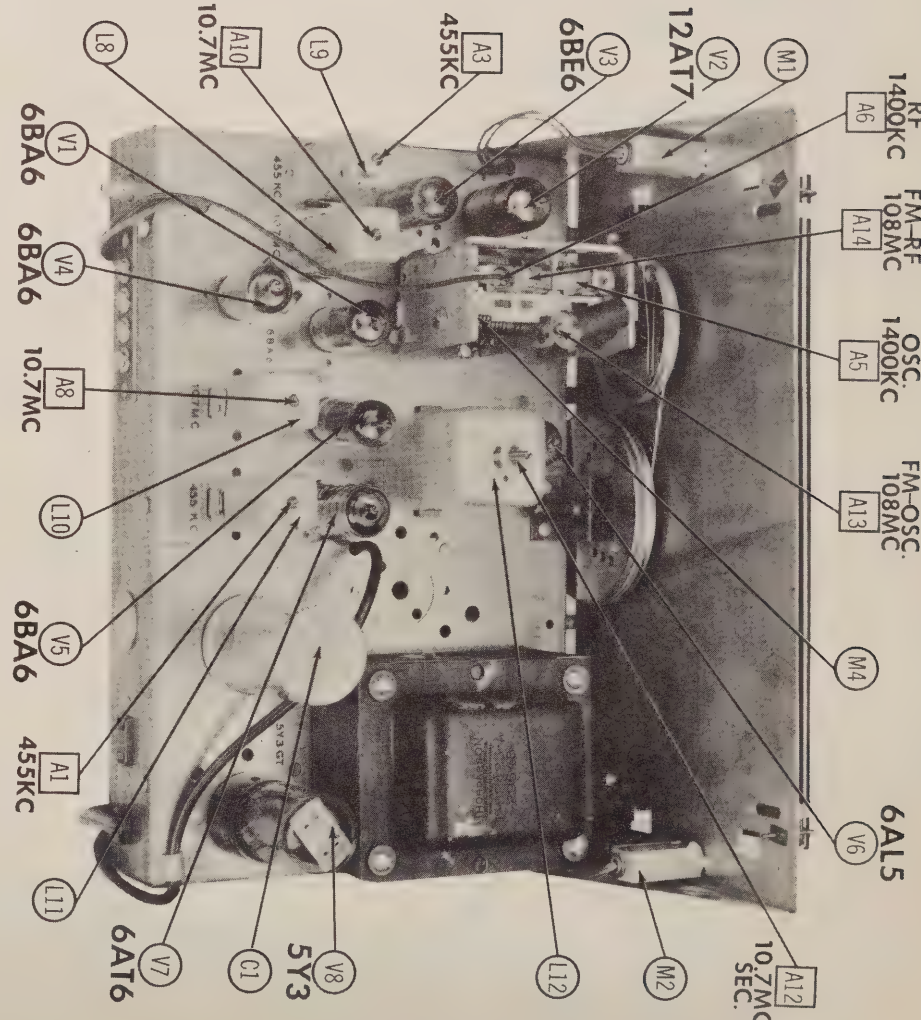
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MEISSNER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AFH3-36		UP22245		TVL-3780	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Decoupling
C2	4	25		PRS150/4		BR550		TVA-1203	Stabilizing Cap
C3	5			SI5		5W5V5	GP1K-050		FM RF Coupling
C4	10000		†	SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	FM RF Amp. Screen
C5	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	FM RF Amp. Cathode
C6	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	FM RF Coupling
C7	10000		†	SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	FM Mixer Plate Dec.
C8	10000			SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	FM Mixer Cathode
C9	1				TCZ-1		NP0K-010		FM Osc. Coupling
C10	1000			SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	FM Osc. Plate
C11	50						N750L-500		FM Osc. Grid
C12	10			SI10N750	TCN-10		N750K-100	5TCU•Q1	Fixed Trimmer
C13	220		†	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AM RF Coupling
C14	10000		†	SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	AM Osc. Anode
C15	220		†	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AM Osc. Grid
C16	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C17	10000			SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	1st. IF Amp. Dec.
C18	10000			SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	1st. IF Amp. Cathode
C19	10000		†	SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	2nd. FM IF Amp. Dec.
C20	10000			SI10000	D6-103	1D3S1	GP2-333-103	5HK-S1	2nd. FM IF Amp. Cathode
C21	100	500		1468-0001	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap.
C22	100	500		1468-0001	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap
C23	2000		†	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-emphasis
C24A	150		♦	SI150	♦ PC51	5W5T15	GP2K-151	♦ 100C1	Diode RF Filter
B	150			SI150		5W5T15	GP2K-151		Diode RF Filter
C25	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C26	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C27	5000		†	SI5000	D6-502	1D5D5	GP2-333-502	5HK-D5	Audio Coupling
C28	220		†	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate
C29	.01	600		P688-01	D6-103	PTE6S1		6TM-S1	Audio Coupling
C30	.047	600		P688-047		PTE6S5		6TM-S47	Line Filter
C31	25								Ant. Isolation

† This Unit consists of one Resistor and one Capacitor
♦ Items C24A, C24B and R18 are combined in one unit

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	29551	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	29550	Q13-133X	AK-82	BTSK-66-S	Volume Control & SW-Tapped @ 200KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R2A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MEISSNER PART No.	IRC PART No.	
R3	68Ω	½			FM RF Amp. Cathode
R4	4700Ω	½		BTS-4700	FM RF Amp. Plate
R5	1KΩ	½	†	BTS-1K	FM RF Amp. Decoupling
R6	560Ω	½		BTS-560	FM Mixer Cathode
R7	1KΩ	½	†	BTS-1K	FM Osc. Plate
R8	10KΩ	½			FM Osc. Grid
R9	2.2KΩ	½		BTS-2.2K	Antenna Shunt
R10	22KΩ	½	†		AM Converter Grid
R11	27Ω	½	†		Parasitic Suppressor
R12	1Meg	½			AM Converter Grid
R13	1Meg	½		BTS-1Meg	AVC Network
R14	2.2KΩ	½	†	BTS-2.2K	AM Converter Decoupling
R15	500KΩ	½		BTS-500K	AM Det. Diode Load
R16	68Ω	½			1st. IF Amp. Cathode
R17	1KΩ	½		BTS-1K	1st. IF Amp. Decoupling
R18	47KΩ	½	♦	BTS-47K	AM Det. Diode Load
R19	68Ω	½			FM IF Amp. Cathode
R20	1KΩ	½	†	BTS-1K	FM IF Amp. Decoupling
R21	220Ω	½			Balancing
R22	22KΩ	½	†		De-emphasis
R23	6.8KΩ	½		BTS-6.8K	Ratio Det. Diode Load
R24	6.8KΩ	½		BTS-6.8K	Ratio Det. Diode Load
R25	22KΩ	½		BTS-22K	Tone Compensation
R26	10Meg	½	†	BTS-10Meg	AF Amp. Grid
R27	220KΩ	½	†	BTS-220K	AF Amp. Plate
R28	2KΩ	5		1 3/4A-2K	Filter - Wire Wound
R29	2KΩ	5		1 3/4A-2K	Filter - Wire Wound

♦ R18, C24A, C24B are combined in one unit
† This unit consists of one Resistor and one Capacitor
Note 1 Some Models use a 470KΩ Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MEISSNER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	550VCT	5VAC	6.3VAC	29548	P-2953	PM-8405	PH-70 ①
	ⓐ.47A	.050ADC	ⓐ2A	ⓐ2.6A				

① Drill New Mounting Holes

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MEISSNER PART No.	MERIT PART No.	IRC PART No.	
L1	FM Ant. Coil	.1Ω		06150			
L2	FM RF Coil	0Ω		06149			
L3	FM Osc. Coil	0Ω		06148			
L4	Fil. Choke	1.6Ω				CLA	1.8 Microhenries
L5	FM Ant. Loading coil	9.5Ω		06146			
L6	Loop Ant.	.1Ω	2.3Ω	06140			
L7	AM Osc. coil	5.5Ω		06200	BC-400		Tap at .6Ω
L8	1st. FM IF	.6Ω	.6Ω	16-3487	FM-254		
L9	1st. AM IF	13.9Ω	15Ω	16-6758	BC-352		
L10	2nd. FM IF	.6Ω	.6Ω	16-3487	FM-254		
L11	2nd. AM IF	13.9Ω	15Ω	16-6758	BC-352		
L12	Ratio Det. Trans.	.7Ω	.1Ω	05453	FM-252 ①		Tap at .2Ω
L13	Line Choke	1.1Ω				CL-1	2.2 Microhenries
L14	Line Choke	1.1Ω				CL-1	2.2 Microhenries

① Drill New Mounting Holes

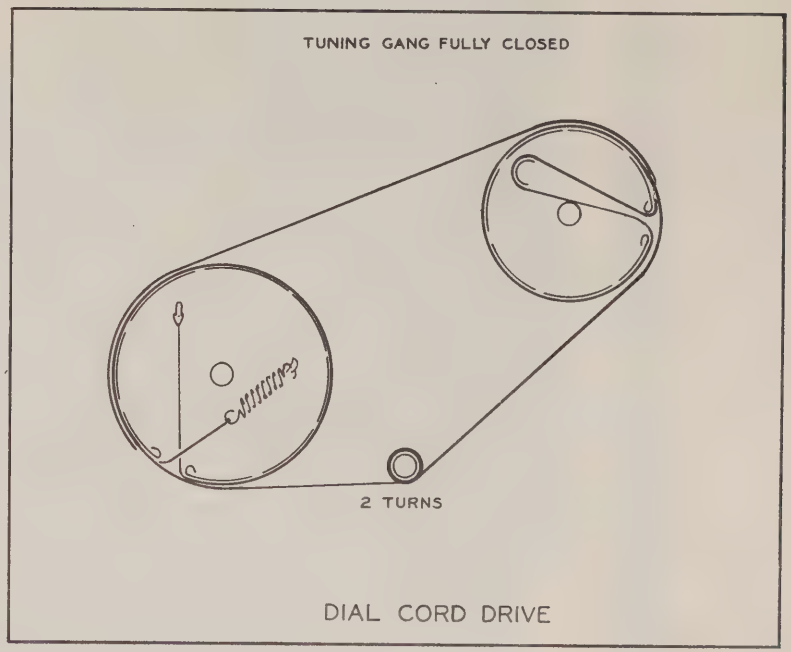
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MEISSNER PART No.		
M1	Bayonet	6-8	.25	Blue			Type No. 44
M2	Bayonet	6-8	.25	Blue			Type No. 44

MISCELLANEOUS

ITEM No.	PART NAME	MEISSNER PART No.	NOTES
M3	Switch		Function Selector
M4	Tuning Gang	34169	AM Sections (34-483MMF, 40-220MMF)



DIAL CORD DRIVE

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 1, (grid) of 6BE6, (V3). Low side to chassis.	455KC (400∿ Mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.		Loop	1400KC (400∿Mod)	"	1400KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	.01MFD	High side to Pin 1, (Grid), of 6BA6, (V4). Low side to chassis.	10.7MC (unmod.)	FM (center)	Tuning gang fully closed.	DC probe to Point Ⓐ. Common to chassis.	A7, A8, A9	Adjust for max. deflection
4.	"	High side to Pin 7, (grid) of 12AT7, (V2). Low side to chassis.	"	"	"	"	A10, A11	"
5.	"	"	"	"	"	DC probe to Point Ⓑ. Common to Chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	.01MFD	High side to Pin 1, (grid) of 6BA6, (V4). Low side to chassis.	10.7MC (450KC swp)	FM (center)	Point of non-interference.	Vert. amp. to Point Ⓐ. Low side to chassis.	A7, A8 A9	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per Fig. 1.
4.	"	High side to Pin 7, (grid) of 12AT7, (V2). Low side to chassis.	"	"	"	"	A10, A11	"
5.	"	"	"	"	"	Vert. amp. to Point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per Fig. 2. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

Steps 6 & 7 should not be performed unless the receiver is badly off calibration.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	300Ω carbon resistor	High side thru 300Ω to ant. term. "A2". Low side to chassis.	108MC (unmod.)	FM	108MC	DC probe to Point Ⓐ. Common to chassis.	A13	Adjust for max. deflection.
7.	"	"	88MC	"	88MC	"	L13	Check coil with a tuning wand and if necessary, expand or compress coil turns for max. deflection. If L3 is changed, repeat steps 5 & 6 until no further improvement can be made.
8.	"	"	108MC	"	108MC	"	A14	Adjust for max. deflection.
9.	"	"	88MC	"	88MC	"	L2	Check coil with a tuning wand and if necessary, expand or compress coil turns for max. deflection. If L2 is changed, repeat steps 8 & 9 until no further improvement can be made.

FIG. 1

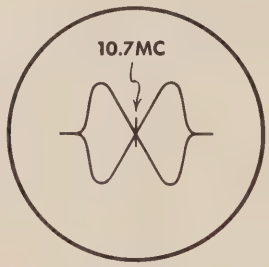


FIG. 2

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 2811A

PACKARD-BELL
MODELS 2311, 2811A

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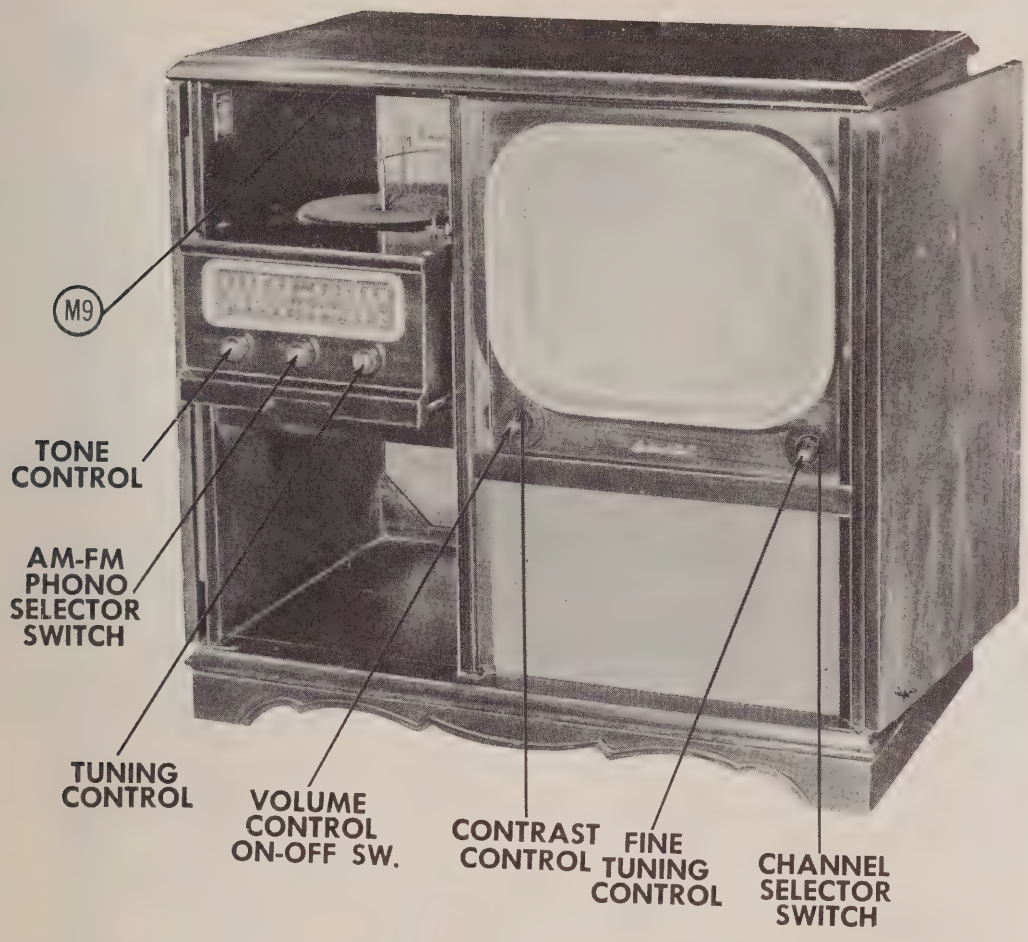
DATE 3-52 SET 161 FOLDER 6



PACKARD-BELL
MODELS 2311, 2811A

PACKARD BELL MODEL 2811A

TRADE NAME	Packard Bell Models 2311, 2811A
MANUFACTURER	Packard Bell Co., - Service Div. 11th & Hope Sts., Los Angeles 15, Calif.
TYPE SET	TV-FM-AM-Phono Combination Receiver
TUBES	Twenty Eight
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.9Amp. @ 117 Volts AC
TUNING RANGE—	(TV) Channels 2 thru 13 (FM) 88-108MC (AM) 540-1620KC

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing (Radio) 17
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 13 thru 17
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis-Bottom View (Radio) 12
Photographs (Cont.)
Chassis - Top View (Radio) 12
Chassis - Top View (TV) 3
RF Tuner 10
Resistor and Inductor Identification 19, 20
Resistance Measurements (TV) 8
Schematic (Radio) 18
Schematic (TV) 2
Tube Placement Charts 5

COURTESY OF
L. H. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

FOR SERVICE ON RECORD CHANGER SEE WEBSTER 100 PHOTOFACT SET 135 FOLDER 14.

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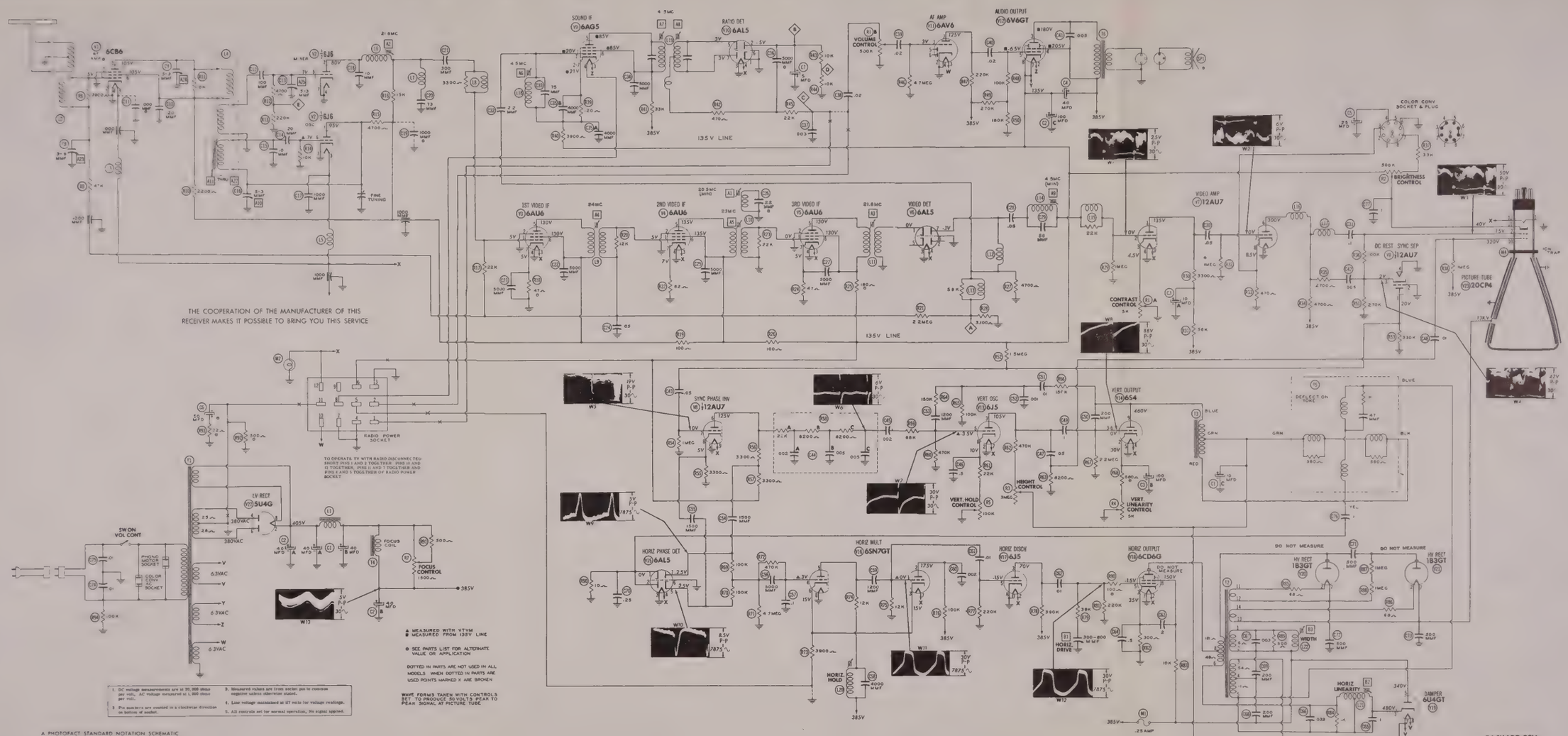
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
135V LINE
135V LINE
TO OPERATE TV WITH RADIO DISCONNECTED SHORT PINS 1 AND 2 TOGETHER PINS 10 AND 11 TOGETHER, PINS 11 AND 7 TOGETHER AND PINS 4 AND 5 TOGETHER OF RADIO POWER SOCKET
RADIO POWER SOCKET
SW ON VOL CONT
PHONO MONITOR SOCKET
COLOR CONV SOCKET
LV RECT 5U4G
380VAC
405V
6.3VAC
6.3VAC
6.3VAC
FOCUS COIL
FOCUS CONTROL
385V
FINE TUNING
VOLUME CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
HEIGHT CONTROL
VERT HOLD CONTROL
VERT LINEARITY CONTROL
HORIZ DRIVE
HORIZ HOLD
HORIZ LINEARITY
WIDTH
DEFLECTION YOKE
ION TRAP
PICTURE TUBE 20CP4
DAMPER 6U4GT
HV RECT 183GT
HV RECT 183GT
DO NOT MEASURE
DO NOT MEASURE
SOUND IF 6AG5
RATIO DET 6AL5
AF AMP 6AV6
AUDIO OUTPUT 6V6GT
1ST VIDEO IF 6AU6
2ND VIDEO IF 6AU6
3RD VIDEO IF 6AU6
VIDEO DET 6AL5
VIDEO AMP 12AU7
DC REST SYNC SEP 12AU7
SYNC PHASE INV 12AU7
VERT OSC 6J5
VERT OUTPUT 6S4
HORIZ PHASE DET 6AL5
HORIZ MULT 6SN7GT
HORIZ DISCH 6J5
HORIZ OUTPUT 6CD6G
COLOR CONV SOCKET & PLUG
4.5MC
21.8MC
20.5MC (MIN)
23MC
24MC
4.5MC (MIN)
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
W11
W12
W13
A MEASURED WITH VTVM B MEASURED FROM 135V LINE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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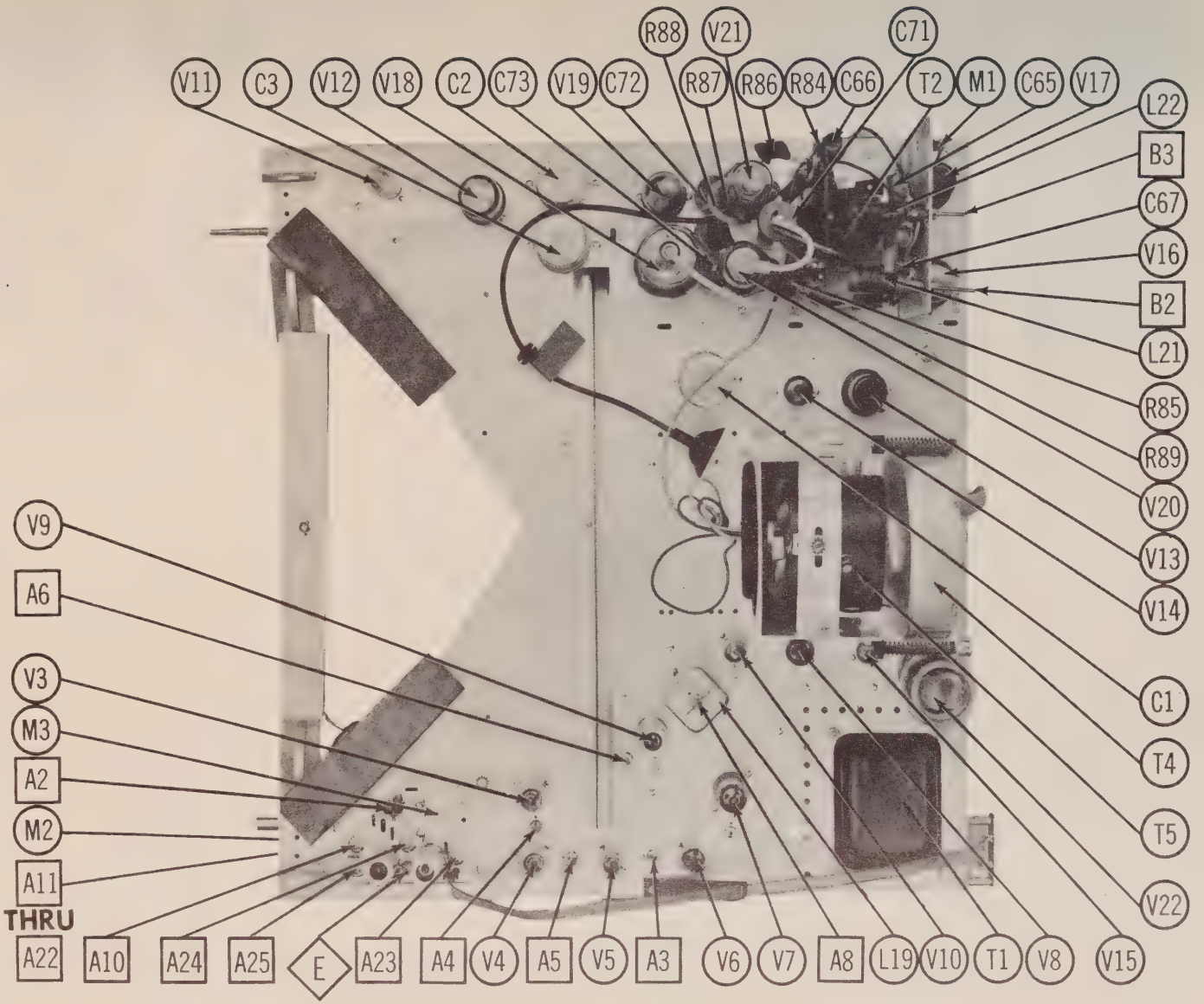
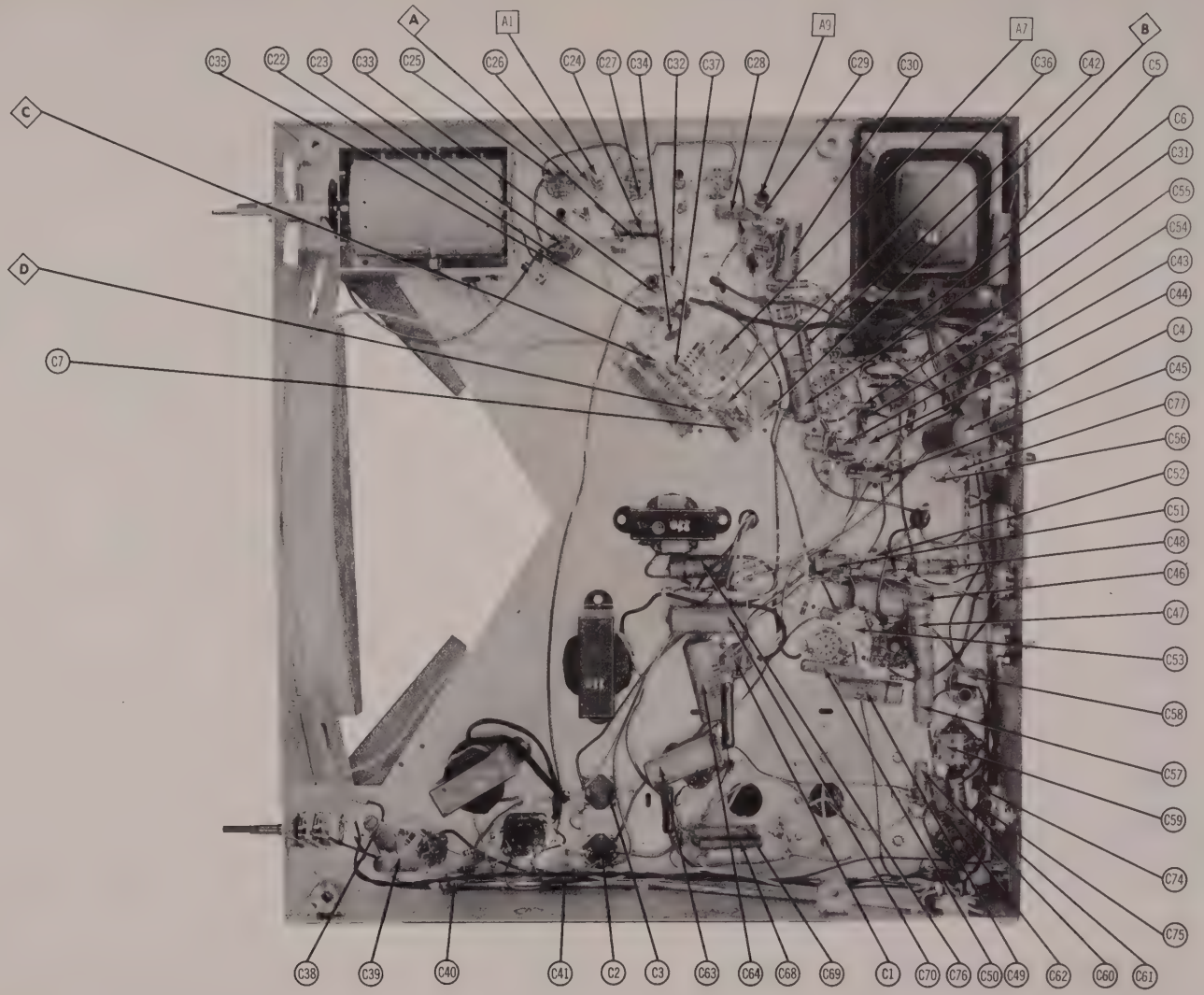
PACKARD-BELL MODELS 2311, 2811A

PACKARD-BELL MODELS 2311, 2811A



CHASSIS TOP VIEW



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CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

BOTTOM VIEW

TOP VIEW

TUBE PLACEMENT CHART

PROPERTY OF
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TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal discharge tube, (V17), from its socket.
If the TV portion of the receiver is to be aligned without the radio chassis connected, short pins 1 & 2, pins 6 & 8, pins 10 & 12 and pins 4 & 5 of the radio plug socket. Also connect a short across R92.
If the radio is connected turn the function selector switch to TV, (maximum counter-clockwise).

VIDEO IF ALIGNMENT

Remove the converter tube, (V2) and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C24, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	20.5MC (unmod.)	Any	DC probe to Point A. Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	21.8MC	"	"	A2, A3	Adjust for Maximum Deflection.
3.	"	"	24MC	"	"	A4	"
4.	"	"	33MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield, floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC swp.)	20.5MC 21.8MC 25MC	Any	Vert. amp. to Point A. Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A3 thru A5 for proper response. If the set is to be operated in a "fringe" area retouch A2 thru A5 for response curve similar to Fig. 2.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B. Common to chassis.	A6, A7	Adjust for maximum deflection
7.	"	"	"	"	DC probe to Point C. Common to Point B.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (450KC swp.)	4.5MC	Any	Vert. amp. to Point A. Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per Fig. 3.
7.	"	"	"	"	"	Vert. amp. to Point A. Low side to chassis.	A8	Reconnect capacitor C7. Adjust A8 so 4.5MC occurs at center of crossover lines as per Fig. 4. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru detector, (Fig. 5), to Pin 2 of picture tube. Low side to chassis.	A9	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A10 will not bring all channels within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point A. Low side to chassis.	A11	Adjust to place markers as shown in Fig. 6.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A12	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A13	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A14	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A15	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A16	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A17	
			85MC (10MC swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A19	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A20	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A21	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A22	

FIG. 1

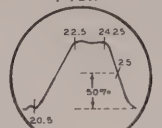


FIG. 2

FIG. 3

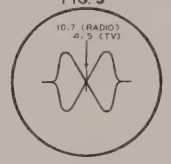


FIG. 4

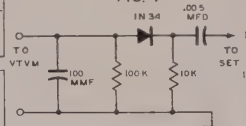


FIG. 5

FIG. 6

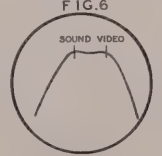


FIG. 7

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Remove the bias battery and short the AGC line, from the tuner, to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point A. Low side to chassis.	A23, A24 A25	Adjust for response curve similar to Fig. 7 with markers above 90%.
11.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to Fig. 7. If markers fall below 70% on any channel make slight adjustment of A23, A24, and A25 with channel switch set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointers turn tuning gang fully closed and set each pointer to the last reference mark at the low frequency end of their respective dial scales.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	.01MFD	High side to Pin 7, (Grid) of 6BE6, (V25). Low side to chassis.	455KC (400\Mod.)	AM (third pos. CW)	Tuning gang fully open.	Across voice coil.	A26, A27, A28, A29	Adjust for maximum output.
13.	"	"	1620KC	"	"	"	A30	"
14.		Loop	1500KC	"	Tune for max. output.	"	A31	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
15.	.01MFD	High side to Pin 1, (Grid) of 6BA6, (V26). Low side to chassis.	10.7MC (unmod.)	FM (max. CW)	Tuning gang fully closed.	DC probe to Point B. Common to chassis.	A32, A33 A34	Adjust for max. deflection.
16.	"	High side to Pin 2, (Grid) of 12AT7, (V24). Low side to chassis.	"	"	"	"	A35, A36	"
17.	"	"	"	"	"	DC probe to Point C. Common to Point B.	A37	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
15	.01MFD	High side to Pin 1, (Grid) of 6BA6, (V26). Low side to chassis.	10.7MC (450KC swp)	FM (max. CW	Point of non-interference.	Vert. amp. to Point A. Low side to chassis.	A32, A33, A34	Disconnect stabilizer capacitor C78. Adjust for maximum amplitude and symmetry as per Fig. 3.
16.	"	High side to Pin 2, (Grid) of 12AT7, (V24). Low side to chassis.	"	"	"	"	A35, A36	"
17.	"	"	"	"	"	Vert. amp. to Point A. Low side to chassis.	A37	Reconnect capacitor C78. Adjust A37 so 10.7MC occurs at center of crossover lines as per Fig. 4. SLIGHTLY retouch A32 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

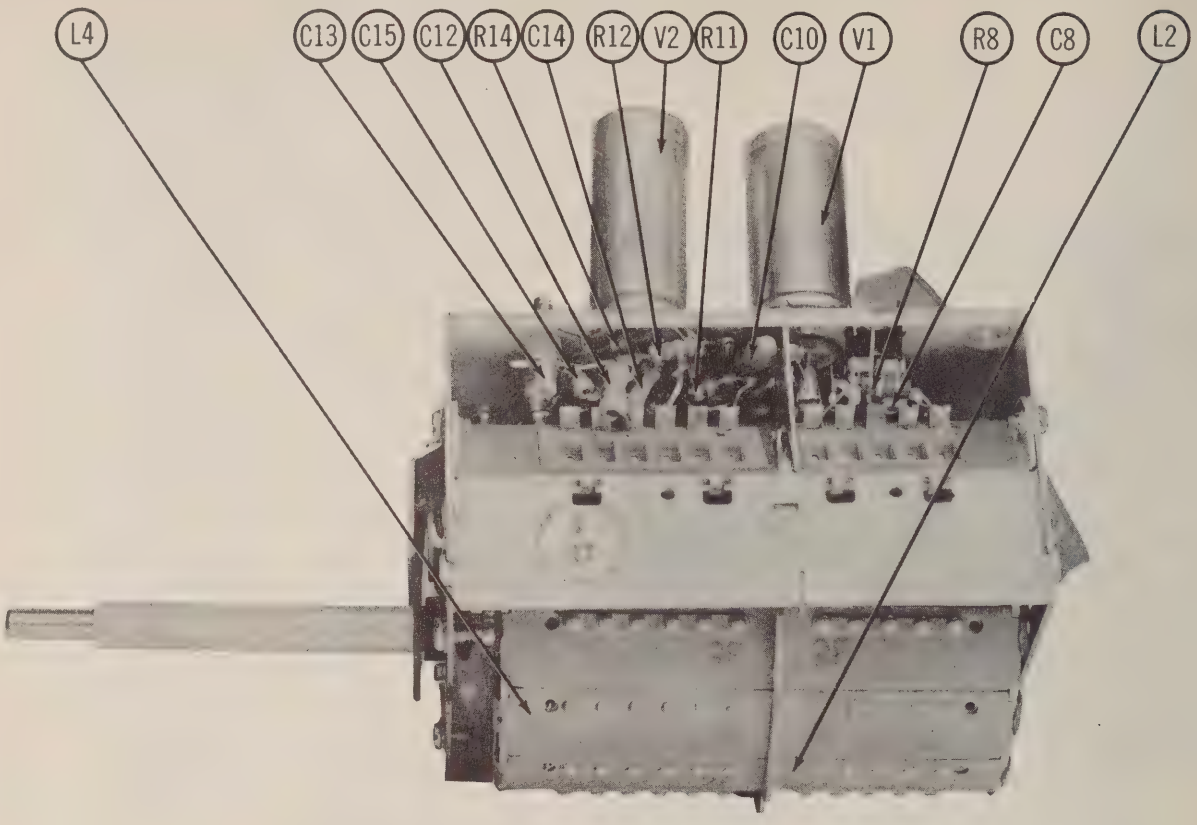
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
18.	300Ω carbon resistor	High side thru 300Ω to ungrounded FM ant. terminal. Low side to chassis.	108MC (unmod.)	FM	108MC	DC probe to Point B. Common to chassis.	A38, A39	Adjust for max. deflection.
19.	"	"	88MC	"	88MC	"	L35, L36	Check coils with a tuning wand and if necessary expand or compress coil turns for max. deflection. If coils are changed repeat steps 18 and 19 until no further improvement can be made.

PACKARD-BELL
MODELS 2311, 2811A

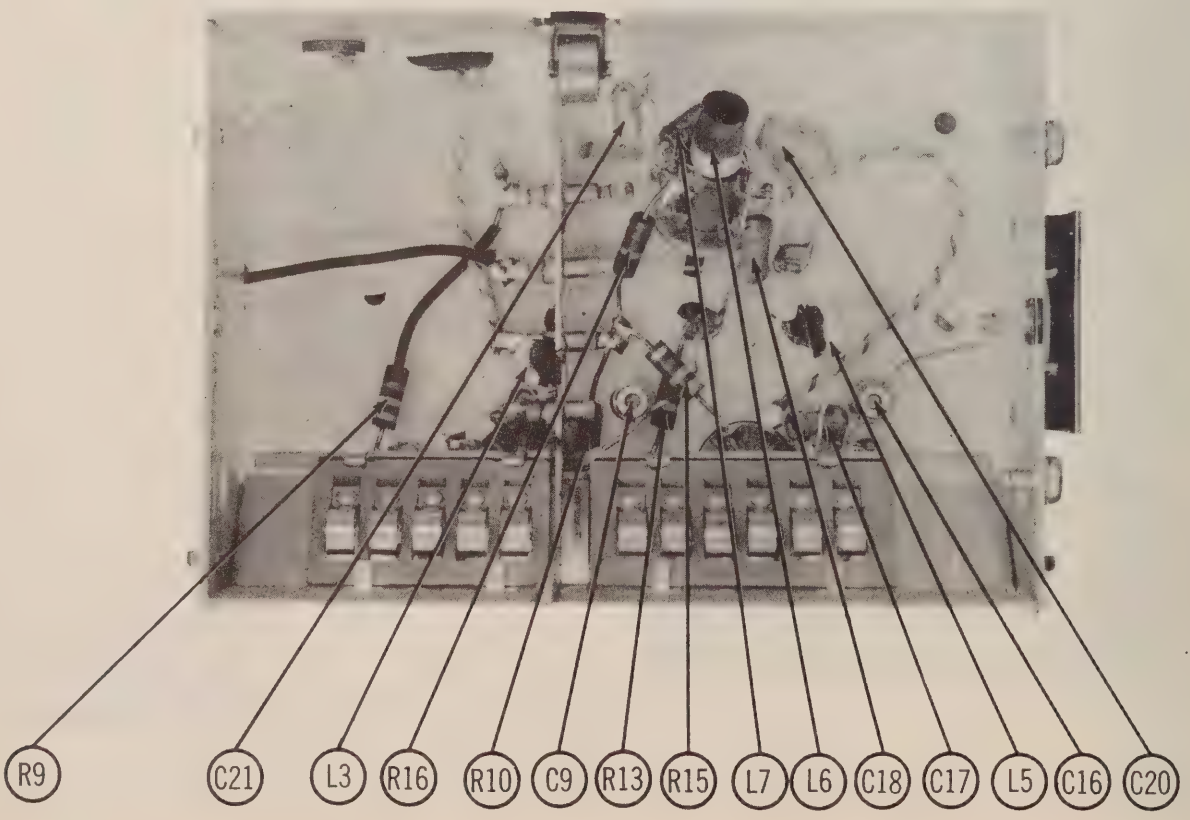
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	2.2Meg	0Ω	.2Ω	0Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■4.9KΩ	■15KΩ	.2Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AU6	2.2Meg	0Ω	.1Ω	0Ω	■200Ω	■200Ω	47Ω		
V 4	6AU6	2.2Meg	0Ω	.1Ω	0Ω	■100Ω	■100Ω	82Ω		
V 5	6AU6	.3Ω	0Ω	.1Ω	0Ω	■180Ω	■180Ω	47Ω		
V 6	6AL5	.3Ω	Inf.	0Ω	.1Ω	Inf.	0Ω	1.8KΩ		
V 7	12AU7	†60KΩ	1Meg	110Ω	0Ω	0Ω	†5.1KΩ	1Meg	470Ω	.1Ω
V 8	12AU7	250KΩ	0Ω	270KΩ	0Ω	0Ω	■6.6KΩ	1Meg	3.3KΩ	.1Ω
V 9	6AG5	■3.9KΩ	■4KΩ	■.1Ω	■0Ω	†33KΩ	†33KΩ	■4KΩ		
V 10	6AL5	0Ω	20KΩ	0Ω	.1Ω	Inf.	0Ω	Inf.		
V 11	6AV6	4.7Meg	0Ω	.1Ω	0Ω	Inf.	Inf.	†220KΩ		
V 12	6V6GT	.4Ω	■.1Ω	†850Ω	†300Ω	210KΩ	100KΩ	■0Ω	50KΩ	
V 13	6J5	0Ω	0Ω	#2.7Meg	#2.3Meg	470KΩ	1.4KΩ	.1Ω	80KΩ	
V 14	6S4	Inf.	2.2KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	Inf.	Inf.	#1.2KΩ
V 15	6AL5	10Ω	10Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 16	6SN7GT	12KΩ	†100KΩ	3.9KΩ	5.1Meg	†12KΩ	3.9KΩ	.1Ω	0Ω	
V 17	6J5	0Ω	.1Ω	†390KΩ	Inf.	220KΩ	.7Ω	0Ω	0Ω	
V 18	6CD6G	Inf.	.1Ω	300Ω	220KΩ	220KΩ	Inf.	0Ω	†10KΩ	TOP CAP #50Ω
V 19	6U4GT	Inf.	Inf.	300KΩ	Inf.	†300Ω	Inf.	#60Ω	#60Ω	
V 20	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #200Ω
V 21	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #Inf.
V 22	5U4G	Inf.	40KΩ	Inf.	25Ω	Inf.	26Ω	Inf.	40KΩ	
V 23	20CP4	0Ω	370KΩ	PIN 10 †1Meg	PIN 11 100KΩ	PIN 12 .1Ω				

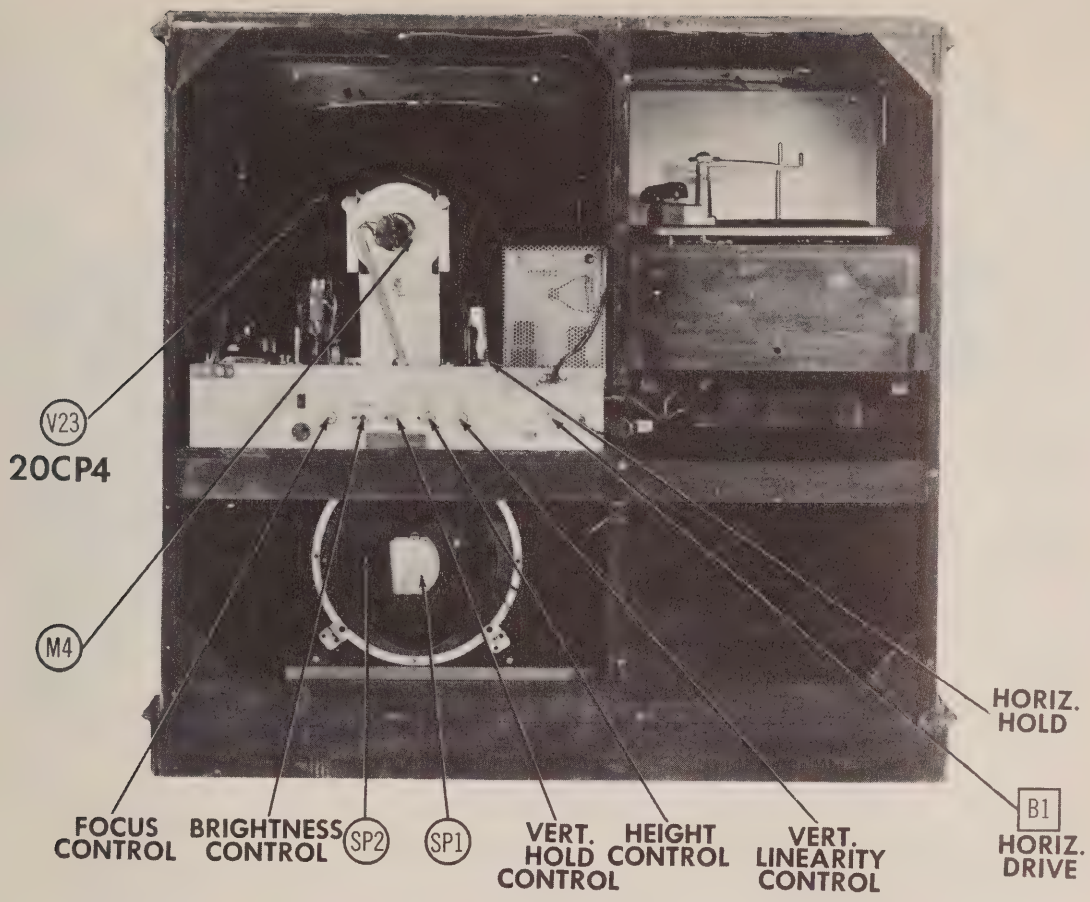
ALL MEASUREMENTS TAKEN IN TV POSITION ONLY
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
■ MEASURED FROM 135 VDC LINE
MEASURED FROM PIN 3 OF V19



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in TV station, preferably a test pattern.

Turn the horizontal hold adjustment to synchronize the picture.

Switch to another channel and back again. If the picture does not immediately pull back into sync. retouch the hold adjustment and repeat the check.

Turn the horizontal drive trimmer, (B1), all the way out.

If thepicture shows a bright vertical line, adjust the trimmer in, (clockwise), just enough to remove the bright line. If the white line does not appear leave the trimmer fully out.

Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

TV

1. Remove wood screws holding rear covers. Remove covers.
2. Remove 4 push-on type control knobs.
3. Disconnect speaker, radio and record player cables.
4. Remove speaker mounting screws. Remove speaker.
5. Remove 4 chassis bolts. Remove chassis.

Note: For removal of picture tube it is necessary to remove chassis as outlined above.

Radio

1. Remove 3 push-on type control knobs.
2. Remove 4 wood screws holding panel above radio. Remove panel.
3. Remove phono compartment light.
4. Remove complete radio and record player unit.
5. Remove antenna.
6. Remove 3 metal screws holding radio. Remove radio.

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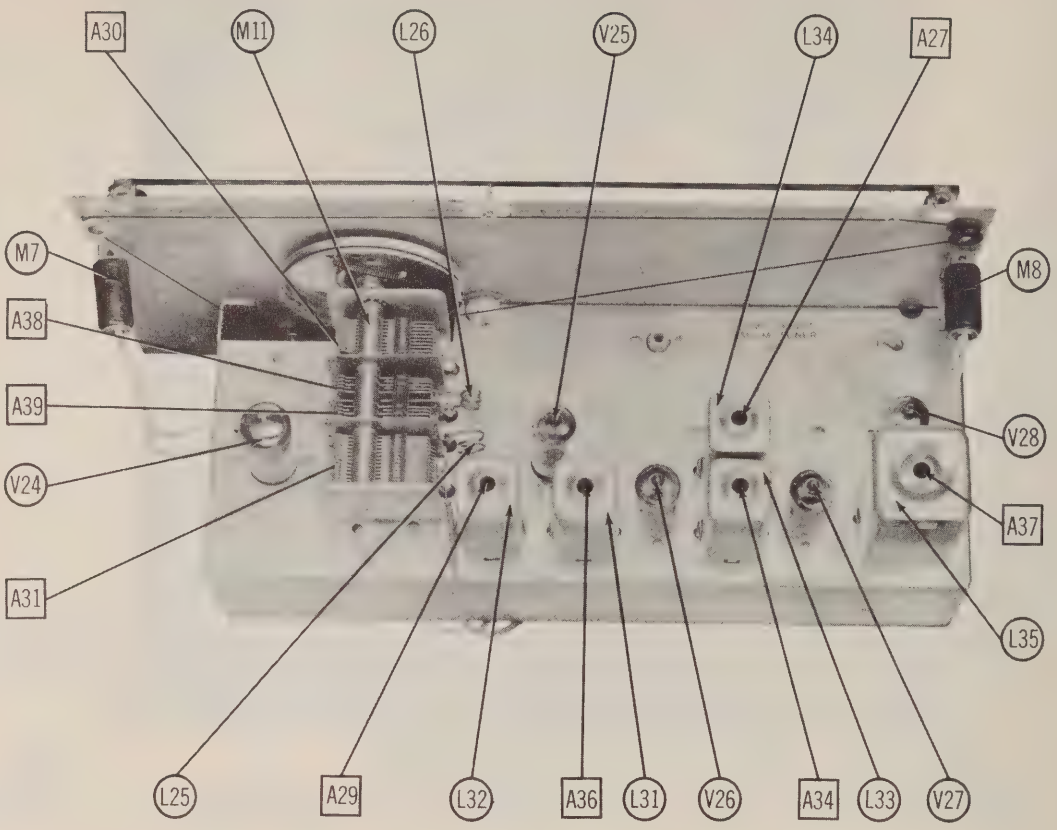
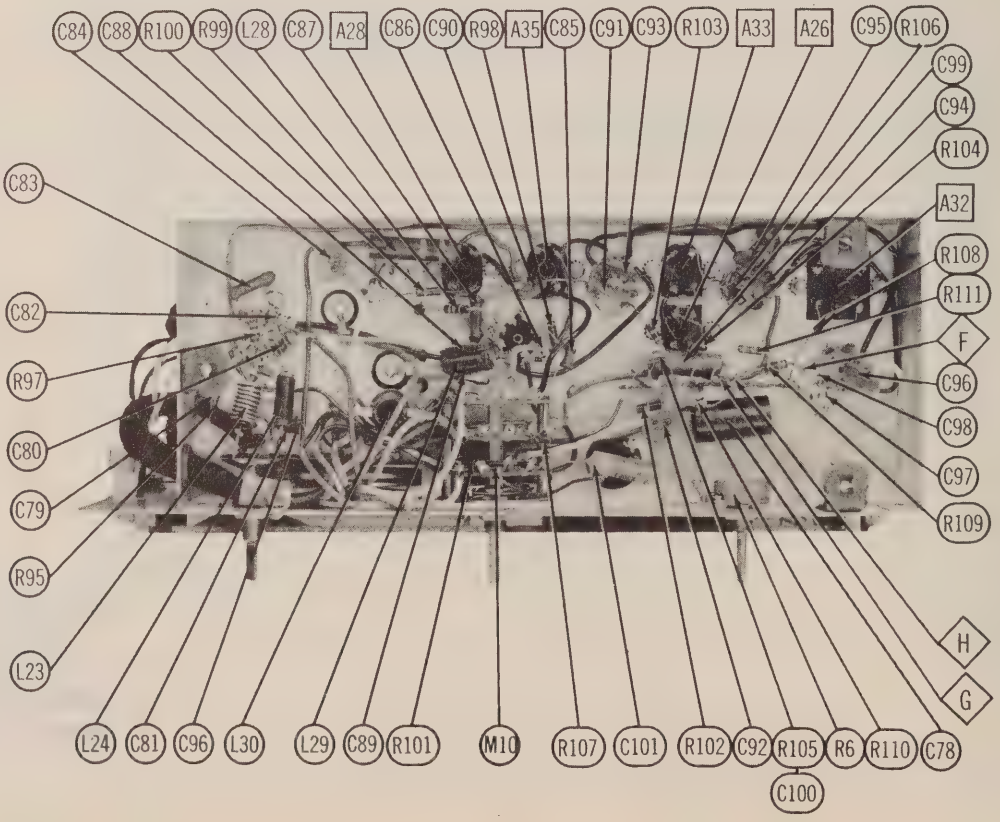


RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6CB6	6CB6	7CM	
B	RF Amp.	6AG5	6AG5	7BD	
C	RF Amp.	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	lst. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Det.	6AL5	6AL5	6BT	
V7	Video Amp.	12AU7	12AU7	9A	
V8	DC Restorer-Sync. Sep.Sync. Phase Inv.	12AU7	12AU7	9A	
V9	IF Amp.	6AG5	6AG5	7BD	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	Audio Amp.	6AV6	6AV6	7BT	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Vert. Osc.	6J5	6J5	6Q	
V14	Vert. Output	6S4	6S4	9AC	
V15	AFC Phase Det.	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Discharge	6J5	6J5	6Q	
V18	Horiz. Output	6CD6G	6CD6G	5BT	
V19	Damper	6U4G	6U4G	4CG	
V20	HV Rect.	1B3GT	1B3GT	3C	
V21	HV Rect.	1B3GT	1B3GT	3C	
V22	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: PACKARD BELL PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V23	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Packard Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	24061	AFH 3-54		UP44150		TVL-2764	■ Filter
B	40	450						TVA-1902	▲ Filter
C	10	500							▲ Decoupling
C2A	40	450	24055	AFH 3-159		UPT4450-1020		TVL-3764	▲ Filter
B	40	450							■ Decoupling
C	100	200							▲ Audio Output Cathode
C3A	10	450	24062	AFH 3-140		UPT204		TVL-2810	▲ Video Amp. Dec.
B	100	50							▲ Vert. Output Cathode
C4	40	350	24063	PRS450/40		BR4035		TVA-1611	Audio Output Dec.
C5	25	25	24006	PRS25/25		BR252A		TVA-1205	Video Amp. Cathode
C6	50	50	24042	PRS50/50		BR505		TVA-1308	Bias Filter ‡
C7	5	50	24038	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C8	3-9				829-10				Variable Trimmer
C9	.5-3				829-3				Variable Trimmer
C10	120			SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Decoupling
C11	1000			SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil. *
C12	100			SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C13	.5-3				829-3				Variable Trimmer
C14	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C15	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C16	.5-3				829-3				Variable Trimmer
C17	1000			SI1000	D6-102		GP2L-102	5HK-D1	Conv. Fil.
C18	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C19	1000			SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass *
C20	72						N750L-720		Fixed Trimmer
C21	300			SI-300	D6-301		GP2K-301		IF Coupling
C22	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec.
C23	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Cathode
C24	.05	200	23071	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C25	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C26	22				TCZ-22		NP0K-220	5TCC-Q22	Fixed Trimmer ††
C27	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C28	.05	200	23071	P288-05	DF-503	PTE4S5		2TM-S5	Video Coupling
C29	56		23922		TCZ-56		NP0-333-560		Fixed Trimmer
C30	.05	600	23010	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C31	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C32	2.2		23952		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C33	75								Fixed Trimmer
C34	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Dec.
C35A	4000		23955	BPD-2X004	D6-402	1D5D4	822-004	5HK-2S4	Sound IF Grid Dec.
B	4000				D6-402	1D5D4			Sound IF Cathode Dec.
C36	5000		23931	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Diode Load Cap. ‡ ‡
C37	.003	600	23016	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C38	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C39	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C40	.02	600	23007	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C41	.005	600	23004	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C42	.005	600	23004	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Video Coupling
C43	.05	200	23017	P288-05	DF-503	PTE4S5		2TM-S5	Sync. Coupling
C44A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net
B	.005		♦ 23951	P688-005	♦PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Net
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net
C45	.002	600	23002	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Osc. Grid Cap.
C46	.5	200	23035	P288-5		GT2P5		2TM-P5	Vert. Osc. Cathode
C47	.05	600	23010	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C48	.01	600	23023	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Sweep Coupling
C49	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C50	200	2500	23958						Vert. Feedback
C51	.01	600	23023	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Feedback
C52	.001	600	23001	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Voltage Divider

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TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA Packard Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	1200	500	23219						Vert. Feedback
C54	1500		23036	SII500	D6-152	1WSD15	GP2L-153	5HK-D15	Horiz. Sync. Coupling
C55	1500		23036	SII500	D6-152	1WSD15	GP2L-153	5HK-D15	Horiz. Sync. Coupling
C58	5000		† 23960	BPD-005	DD-502	LD5D5	8L-005	6HK-D5	AFC Filter
C57	.1	200	23019	P288-1		DF-104	PTE4P1	5TM-P1	Horiz. MV Grid
C58	4000	500		1484-904			LDR5D4		Fixed Trimmer
C59	1200	500	23219						Horiz. MV Feedback
C60	.002	800	23002	P688-002	D6-202	PTE8D2	GP2-333-202	6TM-D2	Horiz. Discharge
C61	.01	800	23023	P688-01	D6-103	PTE8S1	GP2-333-103	6TM-S1	Horiz. Sweep Coupling
C62	.01	800	23023	P688-01	D6-103	PTE8S1	GP2-333-103	6TM-S1	Horiz. Sweep Coupling
C63	.2	600	23037	684-2		GT8P2			Horiz. Output Screen
C64	.5	200	23035	P288-5		GT2P5		2TM-P5	Horiz. Output Cathode
C65	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C66	.033	600	23031	P688-033		PTE6S3		6TM-S5	Damper Filter
C67	.003	600	23016	P688-003	D6-302	PTE8D3	GP2-333-302	6TM-D3	Fixed Trimmer
C68	200	2000	23958						Fixed Trimmer
C69	200	2000	23958						Fixed Trimmer
C70	.25	400	23021	P488-25			GT4P25	4TM-P25	AFC Filter
C71	500	10000	23938	HV10C	TV3-501				HV Doubler
C72	500	10000	23938	HV10C	TV3-501				HV Filter
C73	500	20000	23959	HV20C	TV3-502				HV Filter
C74	.01	125AC	23932	P688-01	D6-103	PTE8S1	GP2-333-103	6TM-S1	Line Filter
C75	.01	125AC	23932	P688-01	D6-103	PTE8S1	GP2-333-103	6TM-S1	Line Filter
C76	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Feedback
C77	.1	600	23012	P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode

* Not used in all Models
• Items C44A, C44B, C44C, R58A, R58B, R58C are combined in one unit
† Items C56 and R72 are combined in one unit
‡ Not used in Model 2311
† † Used in Model 2811A only
† ‡ Models 2311 and 2811 use 470MMF in this application (Part No. 23918)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Packard Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	5000Ω	½		B17-114 *			Contrast Control - Panel
B	500KΩ	½	25835	B13-133 *		RTV-212	5BB-627-S	Volume Control & Switch - Rear
C	Switch			T8-1 *				Attach per instructions in "Concentrikit"
D	Shaft end			E-302 *				Attach per instructions in "Concentrikit"
R2A	500KΩ	½	25832	Q13-133		AG-58-S	AN-59	Brightness Control
B	Shaft			Not req.		FKS-1/4	AK-1	Attach to R2A per instructions
R3A	3Meg	½	25805D	Q11-140		AG-85-S	AN-84	Height Control
B	Shaft			Not req.		FKS-1/4	AK-1	Attach to R3A per instructions
R4	5000Ω	4	25807B			RTV-30	VK-125	Vertical Linearity Control - Wire Wound
R5A	100KΩ	½	25839	Q11-128		AG-49-S	AN-40	Vertical Hold Control
B	Shaft			Not req.		FKS-1/4	AK-1	Attach to R5A per instructions
R7	1500Ω	4	25812			RTV-8	SVP-994	Focus Control - Wire Wound

* Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Packard Bell PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	½			RF Grid
R10	2200Ω 20%	½		BTS-2200	RF Decoupling
R11	10KΩ	½			RF Coil Shunt
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ 20%	½			Mixer Grid
R14	10KΩ	½			Oscillator Grid
R15	4700Ω	½		BTS-4700	Oscillator Plate
R16	15KΩ 20%	½			Mixer Plate
R17	22KΩ	½	73041	BTS-22K	Ist. Video IF Grid
R18	47Ω	½	73009		Ist. Video IF Grid See Note 1
R19	100Ω	½	73003	BTS-100	Decoupling
R20	12KΩ	½	73038	BTS-12K	Video IF Coil Shunt
R21	2.2Meg 20%	½	73165	BTS-2.2Meg	AGC Network
R22	82Ω	½	73002	BTS-82	2nd. Video IF Cathode
R23	22KΩ	½	73041	BTS-22K	2nd. Video IF Coil Shunt
R24	47Ω	½	73009		3rd. Video IF Cathode
R25	180Ω	½		BTS-180	3rd. Video IF Decoupling See Note 2
R26	100Ω	½	73013	BTS-100	Decoupling
R27	4700Ω	½	73033	BTS-4700	Video Detector Diode Load
R28	3300Ω	½	73031	BTS-3300	Video Detector Diode Load
R29	1Meg 20%	½	73161	BTS-1Meg	Video Amplifier Grid
R30	3300Ω	½	73031	BTS-3300	Vodeo Amplifier Plate
R31	56KΩ	½	73246	BTA-56K	Video Amplifier Plate Decoupling
R32	1Meg 20%	½	73161	BTS-1Meg	Video Output Grid
R33	470Ω	½	73021	BTS-470	Video Output Cathode
R34	4700Ω	2	73433	BTB-4700	Video Output Plate
R35	2700Ω	½	73030	BTS-2700	Isolation
R36	100KΩ 20%	½	73149	BTS-100K	Picture Tube Grid
R37	33KΩ	½	73043	BTS-33K	Voltage Divider
R38	1Meg 20%	½	73161	BTS-1Meg	Picture Tube Anode
R39	120Ω	½	73014	BTS-120	Sound IF Cathode
R40	3900Ω	½	73032	BTS-3900	Sound IF Cathode
R41	33KΩ	2	73443	BTS-33K	Sound IF Decoupling
R42	470Ω	½	73021	BTS-470	Balancing
R43	10KΩ	½	73037	BTS-10K	Ratio Detector Diode Load
R44	10KΩ	½	73037	BTS-10K	Ratio Detector Diode Load
R45	22KΩ	½	73041	BTS-22K	De-emphasis
R46	4.7Meg 20%	½	73169	BTS-4.7Meg	Audio Amplifier Grid
R47	220KΩ 20%	½	73153	BTS-220K	Audio Amplifier Plate
R48	100KΩ 20%	½	73149	BTS-100K	Audio Output Grid
R49	270KΩ	½	73054	BTS-270K	Bias Network
R50	180KΩ	½	73052	BTS-180K	Bias Network
R51	270KΩ	½	73054	BTS-270K	DC Restorer Cathode

RESISTORS (CONT.)

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Packard Bell PART No.	IRC PART No.	IDENTIFICATION CODES
R52	1.5Meg 20%	½	73163	BTS-1.5Meg	DC Restorer Plate
R53	330KΩ 20%	½	73155	BTS-330K	DC Restorer Plate
R54	1Meg 20%	½	73161	BTS-1Meg	Sync. Seperator Grid
R55	3300Ω	½	73031	BTS-3300	Sync. Seperator Cathode
R56	3300Ω	½	73031	BTS-3300	Sync. Seperator Plate
R57	3300Ω	½	73031	BTS-3300	Sync. Seperator Plate
R58A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	23951 •	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R59	68KΩ	½	73047	BTS-68K	Integrator Network
R60	470KΩ 20%	½	73157	BTS-470K	Vertical Oscillator Grid
R61	22KΩ	½	73045	BTS-22K	Vertical Oscillator Cathode
R62	470KΩ 20%	½	73157	BTS-470K	Vertical Oscillator Plate
R63	8200Ω 20%	½	73036	BTS-8200	Vertical Peaking
R64	150KΩ 20%	½	73151	BTS-150K	Vertical Oscillator Feedback
R65	100KΩ 20%	½	73149	BTS-100K	Vertical Oscillator Feedback
R66	150KΩ 20%	½	73151	BTS-150K	Vertical Oscillator Feedback
R67	2.2Meg	½		BTS-2.2Meg	Vertical Output Grid
R68	680Ω	2		BTB-680	Vertical Output Cathode See Note 3
R69	100KΩ 20%	½	73149	BTS-100K	Phase Detector Diode Load
R70	100KΩ 20%	½	73149	BTS-100K	Phase Detector Diode Load
R71	4.7Meg 20%	½	73169	BTS-4.7Meg	Phase Detector Diode Load
R72	470KΩ	½	23960 †	BTS-470K	Horizontal AFC Filter
R73	3900Ω	½	73032	BTS-3900	Horizontal MV Cathode
R74	12KΩ	½	73038	BTS-12K	Horizontal MV Plate
R75	12KΩ	½	73038	BTS-12K	Horizontal MV Grid
R76	100KΩ 20%	½	73149	BTS-100K	Horizontal MV Plate
R77	220KΩ 20%	½	73153	BTS-220K	Horizontal Discharge Grid
R78	390KΩ	½	73056	BTS-390K	Horizontal Discharge Plate
R79	39KΩ	½	73044	BTS-39K	Horizontal Peaking
R80	300Ω	2	73013		Parasitic Suppressor See Note 2
R81	220KΩ 20%	½	73153	BTS-220K	Horizontal Output Grid
R82	300Ω	10	73615	1 3/4A-300	Horizontal Output Cathode Wire Wound
R83	10KΩ	5	73642	1 3/4A-10k	Horizontal Output Screen Wire Wound
R84	1000Ω	1	73225	BTA-1000	Horizontal Linearity Coil Shunt
R85	.68Ω	1	73802		HV Rectifier Filament Wire Wound
R86	.68Ω	1	73602		HV Rectifier Filament
R87	1Meg 20%	1	73398		HV Rectifier Load
R88	1Meg 20%	1	73398		HV Rectifier Load
R89	500Ω	5	73617	1 3/4A-500	Width Coil Shunt
R90	10Ω	1	73201		Horizontal Linearity Network
R91	500Ω	5	73617	1 3/4A-500	Focus Coil Shunt
R92	500Ω	5	73617	1 3/4A-500	Bias Network See Note 2
R93	22Ω	½	73006	BW-½-22	Surge Limiter See Note 2
R94	100KΩ 20%	½	73149	BTS-100 K	Line Isolation

Note 1. Some Models may use 120Ω Resistor in this application
Note 2. Not used in all Models
• Items C44A, C44B, C44C, R58A, R58B and R58C are combined in one unit
† Items C56 and R72 are combined in one unit
Note 3. Some Models may use a 820Ω Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓖ1.9A	760VCT .240ADC	5VAC ⓖ3A	6.3VAC ⓖ8.2A SEC. 4 6.3VAC ⓖ1.2A SEC. 5 6.3VAC ⓖ.75A	89036	P-8159		

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	210Ω Tapped ⓖ49Ω	85Ω Tapped ⓖ54Ω	89439		HVO-7		Horiz. Output Trans.
	SEC. 2	SEC. 3					
	8Ω	6Ω					
		SEC. 4 6Ω					
T3	1150Ω Tapped ⓖ11Ω		89430	A-8123	A-3036	T80-5①	Vert. Output Trans.
T4	470Ω		29519	MF-2			Focus Coil
T5A	13Ω		29530	DY-8	MDF-70		Hor. Deflection Coils
B	45Ω						Vert. Deflection Coils

① Drill One New Mounting Hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	7KΩ	3.7Ω	510Ω	.6Ω	89426	A-3849 ①	A-3020 ①	RO-13 ①	① Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA Packard Bell PART No.	VIKING PART No	QUAM PART No.	NOTES
SP1A	FIELD RES	V C IMP.			
B	PM	2.7Ω	83802	13212	12A4A	② Alternate Speaker
	PM	3.4Ω	83705 ②	10712	10A4A	
	CONE DIA.	V. C. DIA.			
SP2A	11"	1"			
B	9 3/4"	3/4"			

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Packard Bell PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.240ADC	42Ω	1.8 Henries	27005	C-2325 ↓	C-2991	TR-3300 ①	↓ Drill one new Mounting Hole

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA Packard Bell PART No.	MERIT PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid and Osc. Coils	0Ω				
L5	Fil Choke	0Ω				
L6	Ist. Video IF	.4Ω				
L7	Conv. Plate Trap	.4Ω				
L8	Ist. Video IF Coupling	.8Ω		29533		Wound on 3.3KΩ Resistor
L9	2nd. Video IF	.2Ω	.2Ω	29055		Includes Trap
L10	3rd. Video IF	.3Ω	.3Ω			
L11	4th. Video IF	.2Ω	.2Ω	29056		
L12	Peaking Coil	3.6Ω		29530	TV-180	36 Microhenries
L13	Peaking Coil	9Ω		29508	TV-183	180 Microhenries - White (Wound on 39KΩ Resistor)
L14	1.5Mc Trap	1.4Ω		29529	TV-151	
L15	Peaking Coil	7.5Ω		29506	TV-182	120 Microhenries - Blue Dot (Wound on 22KΩ Resistor)
L16	Peaking Coil	3.6Ω		29520	TV-180	36 Microhenries - Black
L17	Peaking Coil	8Ω		29507	TV-181	93 Microhenries - Red
L18	Sound IF	.8Ω		29053		
L19	Ratio Det. Trans.	4Ω	.2Ω	29054	TV-110 ①	Tap at 1.3Ω
L20	Horiz. Osc.	95Ω		29527	TV-163	Tap at 2.8Ω
L21	Horiz. Lin.	4.2Ω		29531		
L22	Width Coil	2.4Ω		29532	MWC-2	

① Drill new mounting holes

FUSES

ITEM No	TYPE	RATING	REPLACEMENT DATA Packard Bell PART No. FUSE	Packard Bell PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG	1/4Amp.	45004		313.250	357001	

DIAL LIGHTS

ITEM No	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA Packard Bell PART No.		NOTES
M2	Bayonet	6-8	.25	Blue	54001		Type No. 44

MISCELLANEOUS

ITEM No.	PART NAME	Packard Bell PART No.	NOTES
M3	RF Tuner	10528	
M4	Ion Trap	28055	
	Knob	53067-1	Channel Selector
	Knob	53068	Fine Tuning
	Knob	53069-1	Off/On Volume
	Knob	52070	Contrast
B1	Trimmer	23420	300-800MMF (Horiz. Drive)

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PACKARD-BELL
MODELS 2311, 2811A

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V24	FM RF Amp. FM Mixer	12AT7	12AT7	9A	
V25	FM Osc.AM Conv.	6BE6	6BE6	7CH	
V26	1st.FM AM IF Amp.	6BA6	6BA6	7BK	
V27	2nd.FM Amp.AM Detector	6AU6	6AU6	7BK	
V28	Ratio Detector	6AL5	6AL5	6BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: PACKARD BELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C78	5	50	24038	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C79	470		23916	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	FM RF Amp.Cathode
C80	100		23914	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C81	470		23916	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	FM RF Amp. Dec.
C82	100		23914	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C83	100		23941	SI100NP0	TCZ-100		NP0-333-101	5TCC-T1	Fixed Trimmer
C84	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C85	33		23940	SI33NP0	TCZ-33		NP0L-330	5TCC-Q33	Osc.Grid Cap.
C86	2.2		23952		TCZ-2.2		NP0K-2R2		Osc.Feedback
C87	100		23941	SI100NP0	TCZ-100		NP0-333-101	5TCC-T1	Fixed Trimmer
C88	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Osc. Anode
C89	1500		23936	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AM Conv-FM Osc.Fil.
C90	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C91	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st.IF Amp.Dec.
C92	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st.IF Amp.Cathode
C93A	10000		23962	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st.IF Amp. Fil.
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st.IF Amp.Fil.
C94	10000		23939	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd.FM IF Amp.Dec.
C95A	10000		23962	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	2nd.FM IF Amp.Fil.
B	10000			BPD-01		1D3S1	821-01	5HK-S1	2nd.FM IF Amp.Fil.
C96A	10000		23962	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	Ratio Det. Fil.
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Ratio Det.Fil.
C97	150		23942		TCN-150		N750L-151	5TCU-T15	Diode Load Cap.
C98	150		23942		TCN-150		N750L-151	5TCU-T15	Diode Load Cap.
C99	.002	600	23002	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C100A	100		¶23930	SI100	¶PC-50	5W5T1	GP1K-101	¶100C1	Diode RF Filter
B	100			SI100		5W5T1	GP1K-101		Diode RF Filter
C101	.01	600	23023	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.

¶ Items C100A, C100B, R105 are combined in one unit

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Packard Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R6A	3Meg	½	25512	Q13-140	AG-67-Z	B-85	Tone Control
B	Shaft			Not req.	FS-3	Not req.	Attach to R6A per instructions.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Packard Bell PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R95	220Ω	½	73017	BTS-220	FM RF Amplifier Cathode
R96	1000Ω	½	73025	BTS-1000	FM RF Amplifier Decoupling
R97	470KΩ 20%	½	73157	BTS-470K	FM Mixer Grid
R98	22KΩ	½	73041	BTS-22K	AM Oscillator Grid
R99	6800Ω 5%	2	73435	BTB-6800-5%	Decoupling
R100	100KΩ 20%	½	73149	BTS-100K	AVC Network
R101	1Meg 20%	½	73161	BTS-1Meg	AVC Network
R102	220KΩ 20%	½	73153	BTS-220K	AVC Network
R103	68Ω	½	73011		1st. IF Cathode
R104	2200Ω	½	73029	BTS-2200	1st. IF Decoupling
R105	47KΩ	½	23930 ¶	BTS-47K	Diode RF Filter
R106	120Ω	½	73014	BTS-120	2nd. IF Cathode
R107	2200Ω	½	73029	BTS-2200	2nd. IF Coupling
R108	220Ω	½	73017	BTS-220	Balancing
R109	6800Ω	½	73035	BTS-6800	Ratio Detector Diode Load
R110	6800Ω	½	73035	BTS-6800	Ratio Detector Diode Load
R111	27KΩ	½	73042	BTS-27K	De-emphasis

¶ Items C100A, C100B and R105 are combined in one unit.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Packard Bell PART No.	MERIT PART No.	NOTES
L23	FM Ant. Coil	0Ω		29411		Wound on 1.5KΩ Resistor
L24	RF Choke	.1Ω		29104		
L25	FM RF Coil	0Ω		29118		
L26	FM Osc. Coil	0Ω		29221		
L27	AM Loop Ant.	1.3Ω				
L28	Parasitic Suppressor	0Ω		29113		Wound on 22Ω Resistor
L29	Cath.Choke	.1Ω		29104		
L30	AM Osc. Coil	5.4Ω		29202A	BC-400 ①	Tap at .5Ω
L31	1st.FM IF	.1Ω	1.2Ω	29056	FM-254 ①	
L32	1st.AM IF	13.2Ω	13.2Ω	29050	BC-352 ①	
L33	2nd.FM IF	1.8Ω	.1Ω	29057	FM-254 ①	
L34	2nd. AM IF	15.2Ω	10.2Ω	29052	BC-352 ①	
L35	Ratio Det. Trans.	1.8Ω	.1Ω	29058	FM-252 ①	Tap at .3Ω

① Drill new mounting holes.

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	Packard Bell PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M5		ACD-2J	A-1 A-3	W22AB-T	A65MG A62A	96-T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

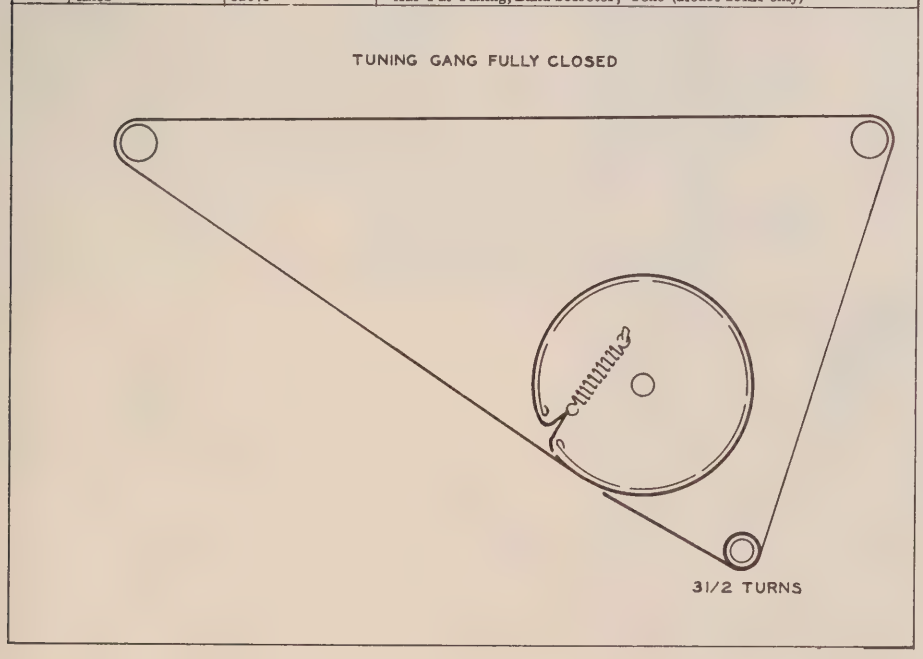
ITEM No.	REPLACEMENT DATA			REMARKS
	Packard Bell PART No.	WALCO PART No.	JENSEN PART No.	
M6		W-10S or W-11A and W-10MGS or W-11MGA	W-16 and W-17	

DIAL LIGHTS

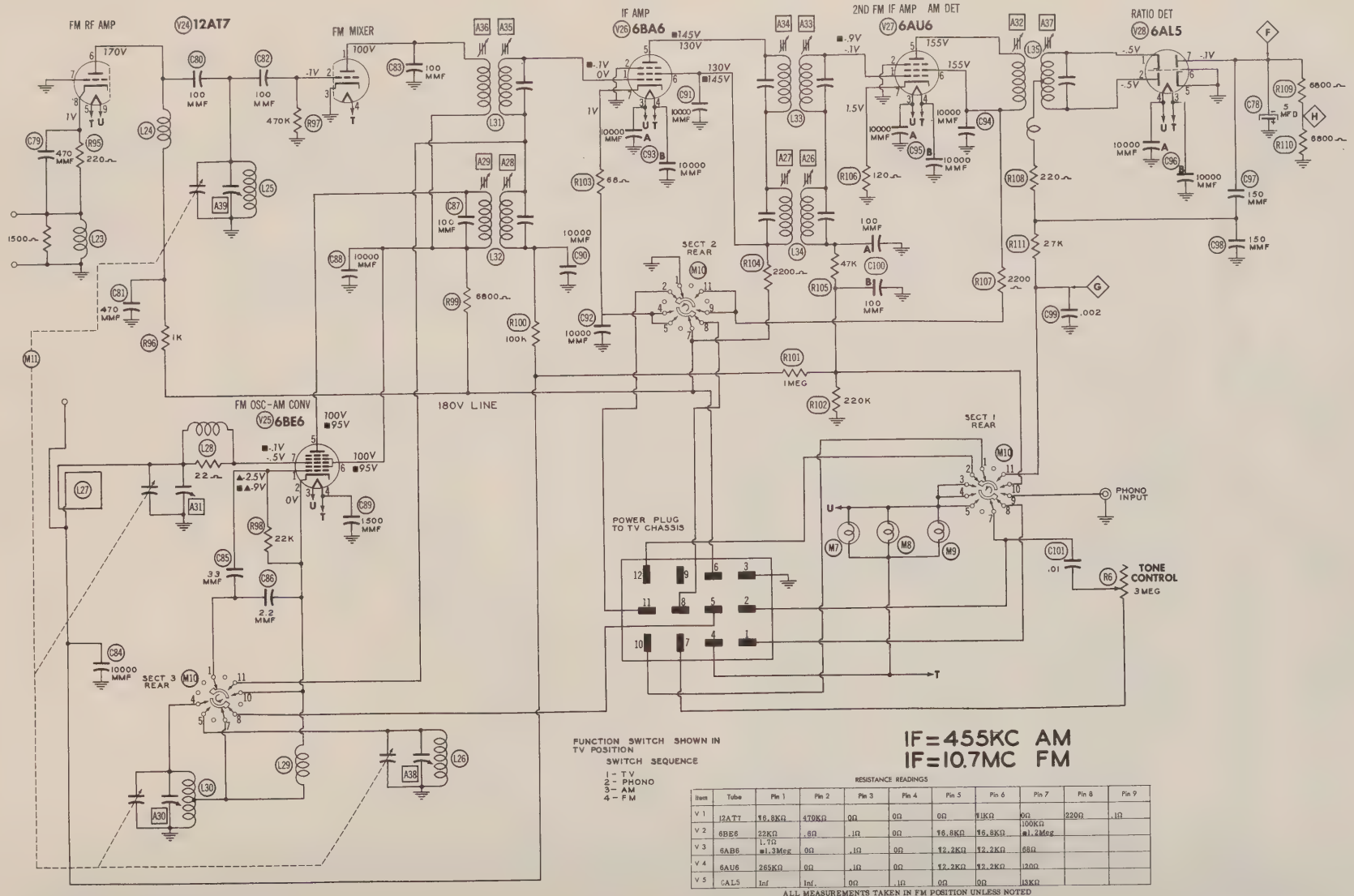
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Packard Bell PART No.		
M7	Bayonet	6-8	.25	Blue	54001		Type No. 44
M8	Bayonet	6-8	.25	Blue	54001		Type No. 44
M9	Bayonet	6-8	.25	Blue	54001		Type No. 44

MISCELLANEOUS

ITEM No.	PART NAME	Packard Bell PART No.	NOTES
M10	Switch	86030	Function (Model 2811A only)
M11	Tuning Cap	23527	37-480MMF 29 - 196MMF (Model 2811A Only)
	Knob	52071	AM-FM Tuning, Band Selector, Tone (Model 2811A only)



DIAL CORD STRINGING



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	¶6.8KΩ	470KΩ	0Ω		0Ω	¶1KΩ	0Ω	220Ω	.1Ω
V 2	6BE6	22KΩ	.6Ω	.1Ω	0Ω	¶6.8KΩ	¶6.8KΩ	100KΩ ■1.2Meg		
V 3	6AB6	1.7Ω ■1.3Meg	0Ω	.1Ω	0Ω	¶2.2KΩ	¶2.2KΩ	68Ω		
V 4	6AU6	265KΩ	0Ω	.1Ω	0Ω	¶2.2KΩ	¶2.2KΩ	120Ω		
V 5	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	0Ω	13KΩ		

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
¶ MEASURED FROM 180VDC LINE
■ MEASURED IN AM POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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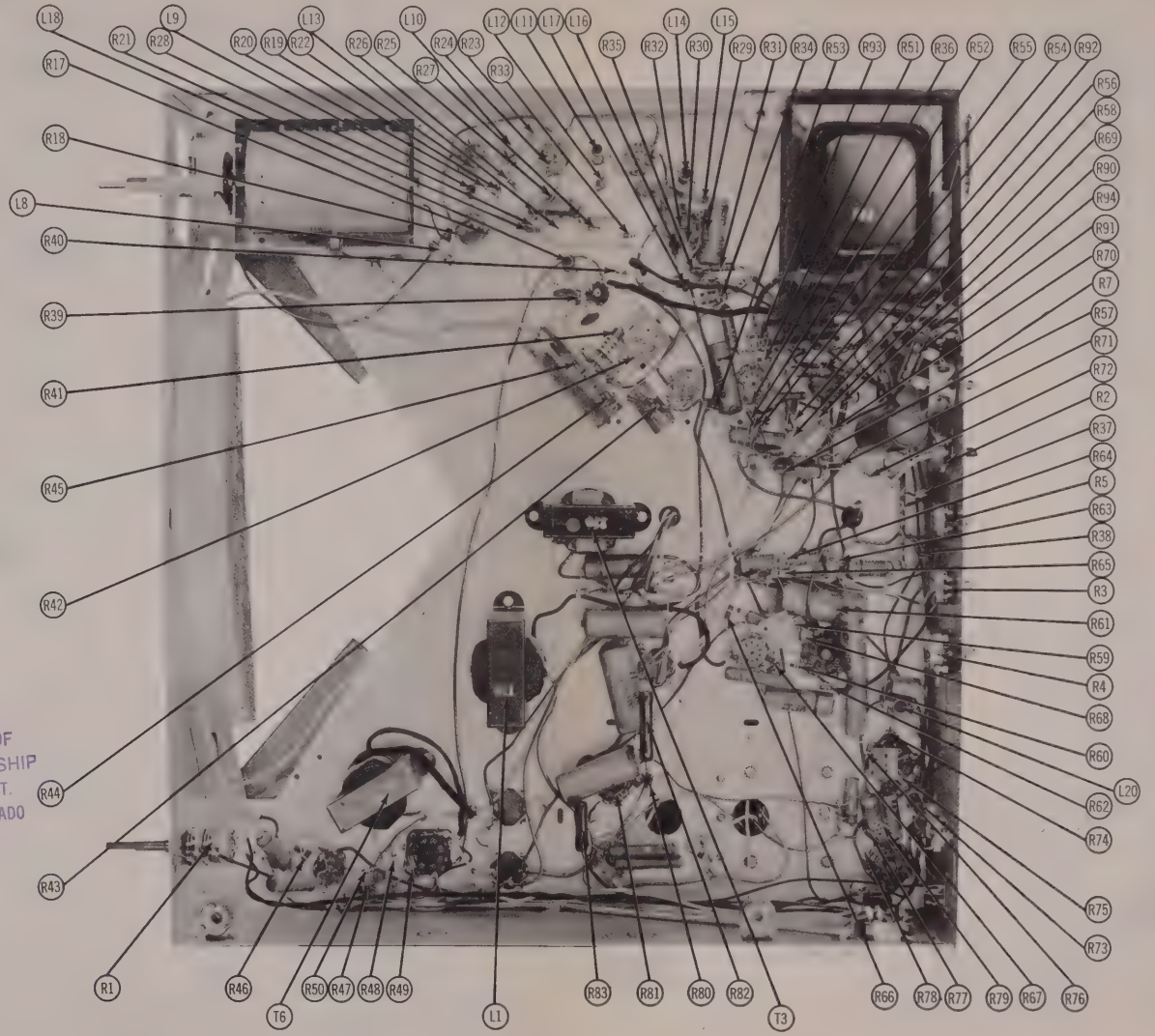
PACKARD-BELL
MODELS 2311, 2811A

RADIO SCHEMATIC



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CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHILCO
MODEL 52-643

PHILCO
MODEL 52-643

TRADE NAME	Philco Model 52-643
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1T4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output.
POWER SUPPLY RATINGS	110-120 Volts AC/DC or 9 Volt "A" Supply & 90 Volt "B" Supply in Pack Form .14Amp. @ 117 Volts AC or 50 MA @ 9 Volts DC & 12MA @ 90 Volts DC

TUNING RANGE—BROADCAST 540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the last dot at the left hand end of dial backplate.
Use battery power, if possible. If AC power is used, use an isolation transformer when available.
If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5, (V2). Low side to B-.	265KC (400∿mod)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	580KC	Set pointer to second dot from left hand end of dial backplate.	"	A6	Rock tuning gang while adjusting for maximum output.
4.		"	"	"	"	A7	Check tracking and sensitivity at low end of dial. If necessary adjust A7.
5.		"	1500KC	Tune for max. output.	"	A8, A9	Adjust in order given for maximum output. Repeat steps 3 and 5 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det. AVC-AF Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	60	150	30-2568-26	E4D428		UP53315			▲ Filter
B	10	150				C10		-	▲ Filter
C	30	150							■ Decoupling
D	60	25							Filament Filter
C2	1.5		30-1221-3	S11.5NP0	TCZ-1.5		NP0K-1R5		Fixed Trimmer †
C3	100		62-1100-09001	S1100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
C4	.05	200	61-0122	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	.05	200	61-0122	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Screen
C6	.05	200	61-0122	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C7	.05	200	61-0122	P288-05	DF-503	PTE4S5		2TM-S5	Fil. Bypass
C8	.1	200	60-0113	P288-1	DF-104	PTE4P1		2TM-P1	Fil. Bypass
C9	.1	200	60-0113	P288-1	DF-104	PTE4P1		2TM-P1	Fil. Bypass
C10	1.5		30-1221-3	S11.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C11	47	500	60-00475417	1468-00005	D6-470		GP1K-470	1FM-45	Osc. Grid Cap.
C12	.003	600	61-0109	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	IF Amp. Dec.
C13A	.001			BPD-001	DD-102	1W5D1	801-001	5HK-D1	Audio Coupling
B	.01		301237	BPD-01	DD-103	1D3S3	821-01	5HK-S1	AF Amp. Screen
C	.0002			SI200	D6-201	5W5T2	GP2K-202	5GA-T2	AF Amp. Plate
D	.002			BPD-002	DD-202	1W5D2	801-002	5HK-D2	Audio Coupling
C14	.004	600	61-0179	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Power Output Plate
C15	.04	400	45-3500-2	P688-04		PTE6S4		6TM-S4	Line Filter
C16	100		62-110009001	S1100	D6-101	5W5T1	GP1K-101	5GA-T1	Tone Comp. *

* Not used in all models.
† Some models use 4.7MMF in this application. (Part No. 30-1230)

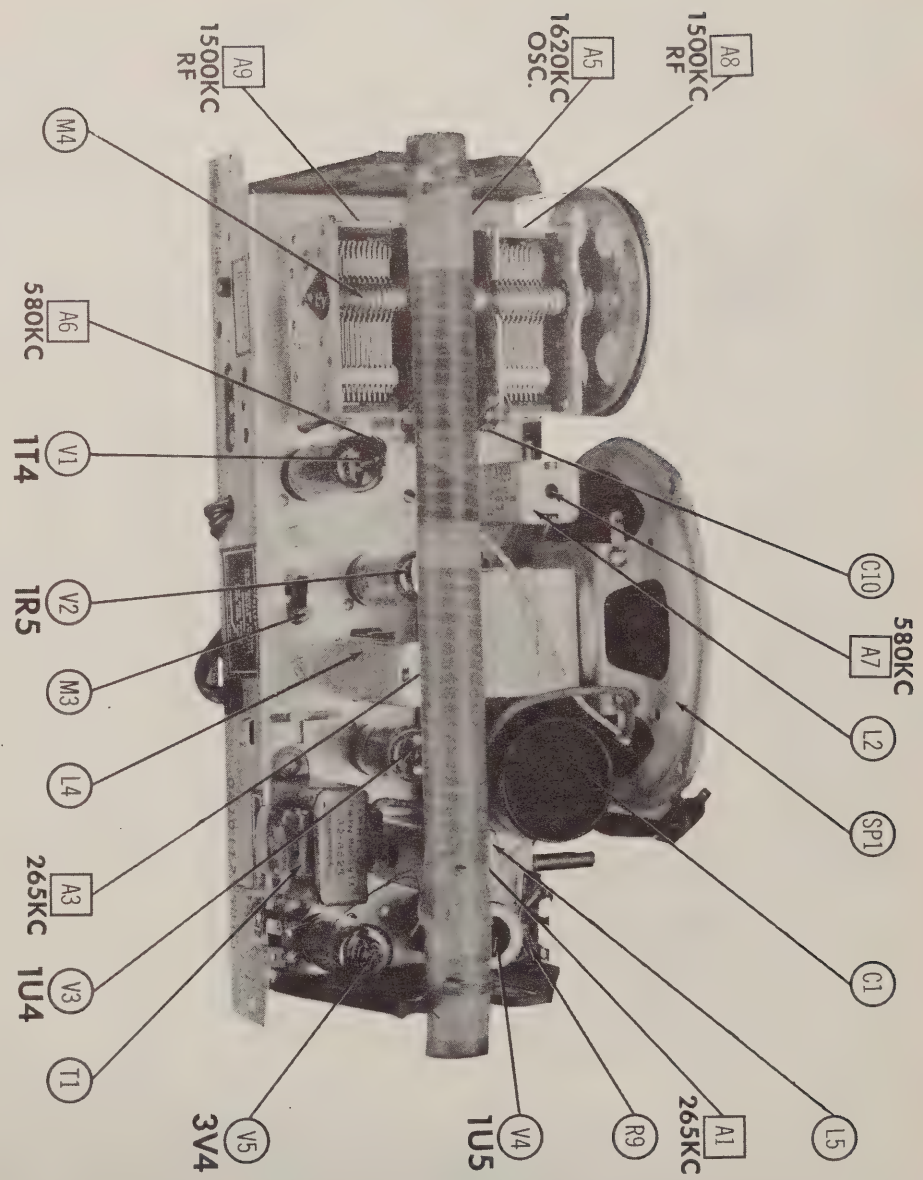
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1Meg	½	33-5566-11	Q13-137	M-63-Z	AN-70	Volume Control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-3	Attach to R1A per instructions.
C	Switch		Not Req.	76-2	SWA-2	K-157	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R2	2.2Meg	½	66-5108340	BTS-2.2Meg	RF Amp. Grid - See note 1.
R3	100Ω	½	66-1108340	BTS-100	Filament String
R4	4.7Meg	½	66-5478340	BTS-4.7Meg	Converter Grid
R5	100KΩ	½	66-4108340	BTS-100K	Osc. Grid
R6	3300Ω	½	66-2338340	BTS-3300	Parasitic Suppressor
R7	15KΩ	½	66-3158340	BTS-15K	Screen Dropping
R8	4.7Meg	½	66-5478340	BTS-4.7Meg	AVC Network
R9	4.7Meg	½	66-5478340	BTS-4.7Meg	AVC Network
R10	82Ω	½	66-0828340	BTS-82	Filament String
R11	220Ω	½	66-1228340	BTS-220	Filament String
R12	2200Ω	½	66-2228340	BTS-2200	IF Amp. Decoupling
R13	100KΩ	½	66-4108340		Diode Filter
R14	4.7Meg	½	66-5478340	BTS-4.7Meg	AF Amp. Grid
R15	4.7Meg	½	66-5478340	BTS-4.7Meg	AF Amp. Screen

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R16	680KΩ	1/2	66-5108340	BTS-680K	AF Amp. Plate See note 1.
R17	2.2Meg	1/2	66-5228340	BTS-2.2Meg	Bias Network
R18	4.7Meg	1/2	66-5478340	BTS-4.7Meg	Output Grid
R19	330Ω	1/2	66-1338340	BTS-330	Filament String
R20	82Ω	1/2	66-0828340	BTS-82	Filament String
R21	1000Ω	1/2	66-2108340	BTS-1000	Filter
R22	120Ω	1/2	33-1334-14		Surge Limiter - Wire Wound
R23A	950Ω	5	33-3431-7	1 3/4A-2000	Filament Dropping - Wire Wound
B	950Ω	5			Filament Dropping - Wire Wound
R24	150K	1/2	66-4158340	BTS-150K	Filament String
R25	15Ω	1/2			Filament Dropping

Note 1. Some models use a 1Meg resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9KΩ	3.4Ω	320Ω	.4Ω	32-8528	A-3329	A-2927 ①	RO-16 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.4Ω	36-1625	ST-105 ② Mod. P5-X	5A1 ③	② Drill and Tap Magnet Frame ③ Drill new mounting holes.
	CONE DIA.	V. C. DIA.				
SP1B	4½ in.	9/16 in.				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PHILCO PART No.	MERIT PART No.	
L1	Loop Ant.	.1Ω	.8Ω	32-4455-4		
L2	RF Coil	100Ω	5.3Ω	32-4399A	BC-391	
L3	Osc. Coil	2.8Ω	6.8Ω	32-4263-2	BC-397	
L4	Input IF	34Ω	34Ω	32-4160-2A	BC-350	
L5	Output IF	37Ω	37Ω	32-4240-6A	BC-351	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	PHILCO PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.065A	34-8003	NB-5	5M4	

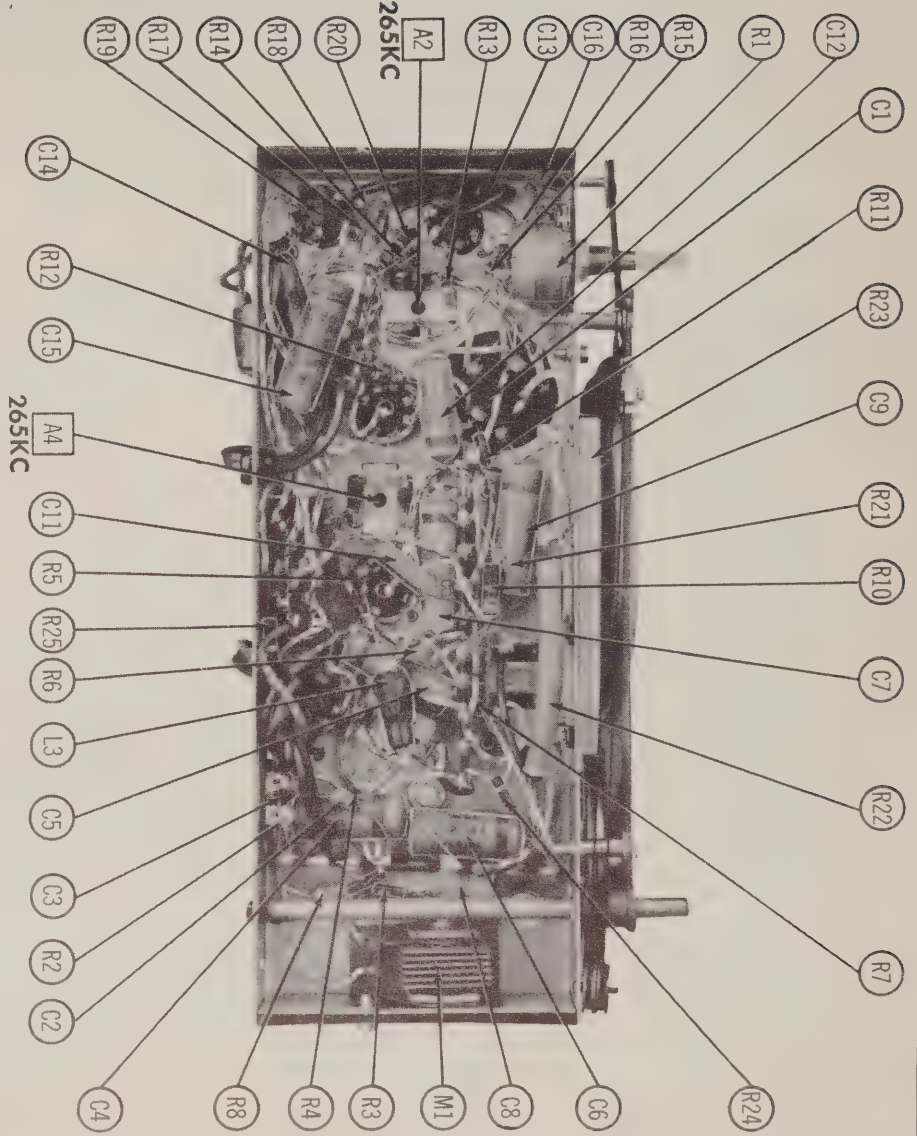
BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V. "A" 90V. "B"	P-363			756			T6Z60	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Switch	42-1899	Power Change-over
M4	3 Gang Var. Cap.	31-2747-2	(26-443MMF, 26-445MMF, 21-439MMF)
A6	Trimmer	31-6473-16	Osc. Padder (600-800MMF)
	Cabinet	10883	
	Dial Scale	54-5127	
	Pointer	56-8774	
	Knobs	54-4773-1	

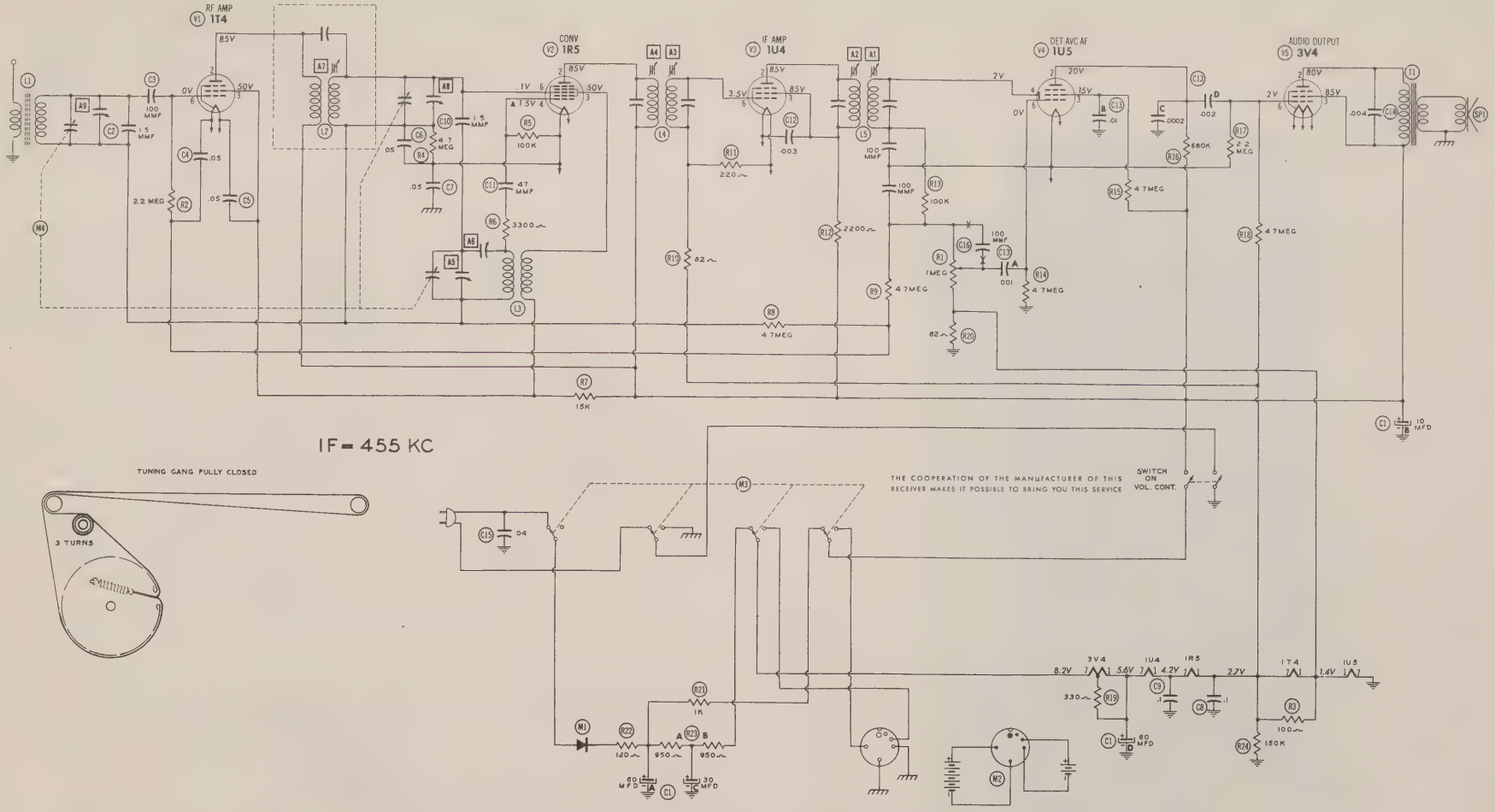
CHASSIS—BOTTOM VIEW



SET 161 FOLDER 7

PHILCO MODEL 52-643

PHILCO MODEL 52-643



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†1.2KΩ	†16KΩ	INF	*	5Meg	*
V 2	1R5	*	†1.1KΩ	†16KΩ	100KΩ	*	3Meg	*
V 3	1U4	*	†3.4KΩ	†3.4KΩ	INF	*	180Ω	*
V 4	1U5	*	†680KΩ	†4.7Meg	1.1Meg	900KΩ	4.7Meg	*
V 5	3V4	*	†1.4KΩ	†1.1KΩ	INF	*	1.6Meg	*

SWITCH M3 IN AC POSITION
† MEASURED FROM OUTPUT OF M1
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
▲ TAKEN WITH VACUUM TUBE VOLTMETER

PROPERTY OF
L. F. BLANKE[illegible]SHIP
3924 [illegible]
DENVER, [illegible]

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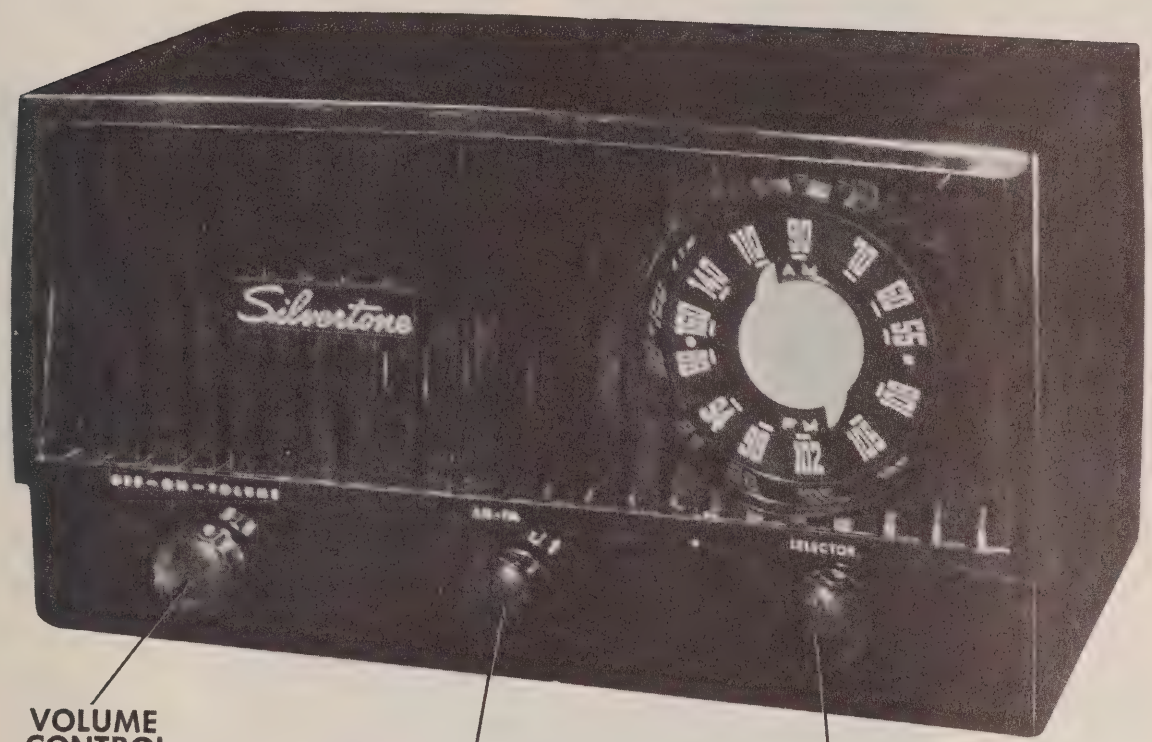
161-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODEL 25, 27 (Ch. 478.238)

SILVERTONE
MODEL 25, 27 (Ch. 478.238)



SILVERTONE
MODEL 25, 27 (Ch. 478.238)

TRADE NAME	Silvertone Model 25, 27(Ch. 478.238)	
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.	
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna	
TUBES (SEVEN)	Types 6BJ6 FM RF Amp., 12AT7 FM Conv., 12BE6 AM Conv., 6BJ6 1st FM-AM IF Amp., 12BA6 2nd IF Amp., 19T8 Det.-AVC-AF Amp. 35C5 Audio Output.	
POWER SUPPLY	110-120 volts AC/DC	RATING .32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	550-1600KC	FREQ. MOD. 88-108 MC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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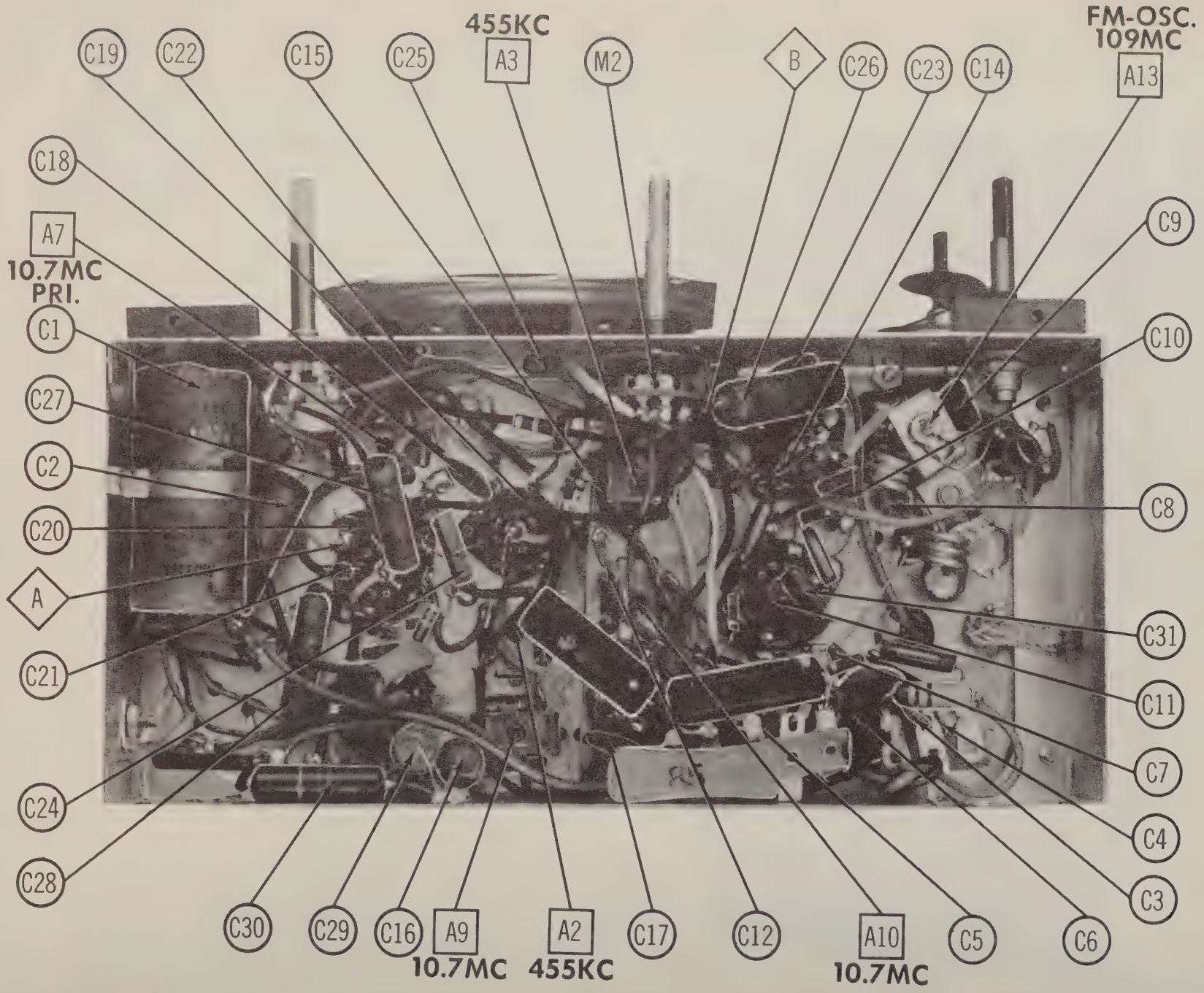
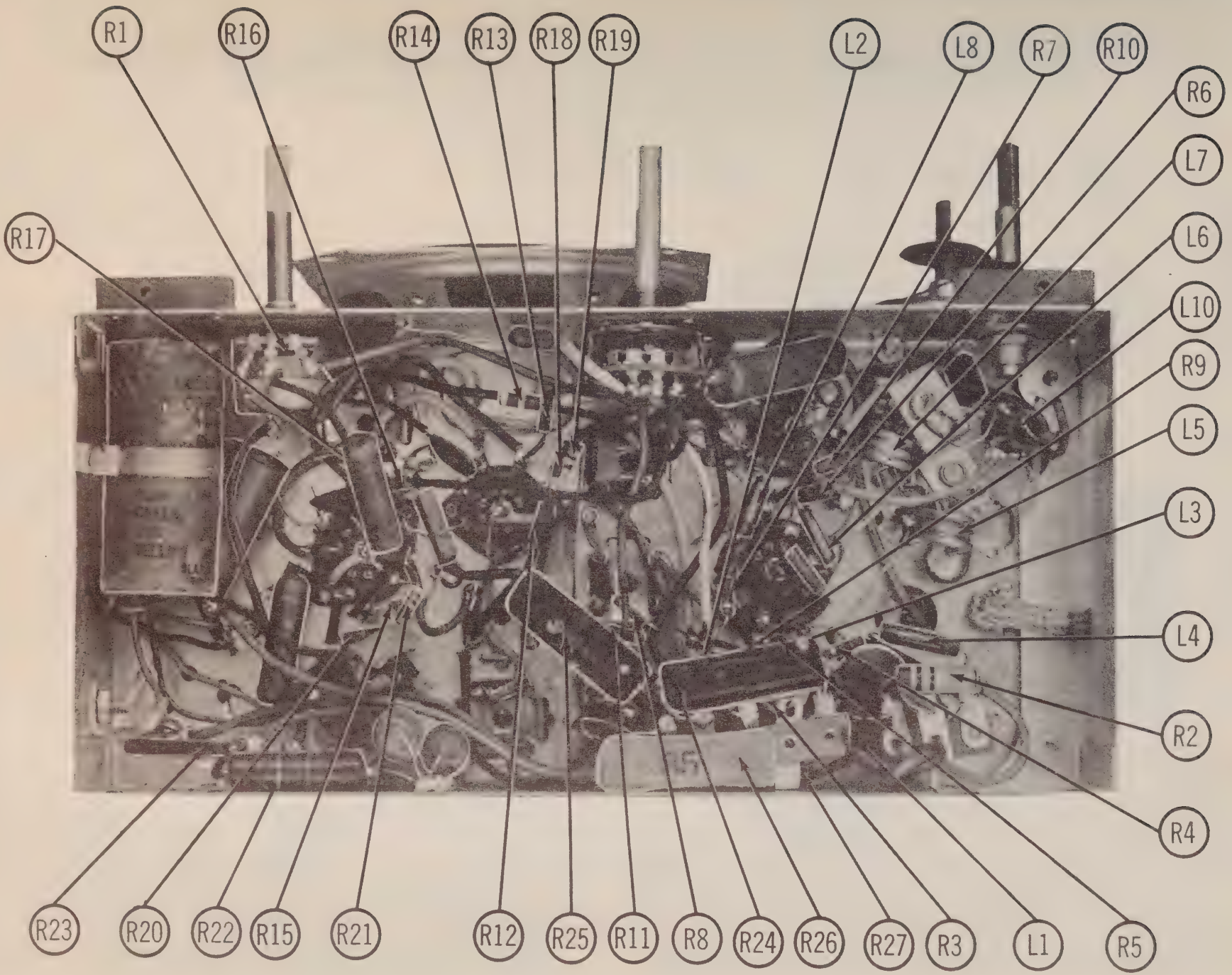

C19
C22
C15
C25
455KC
A3
M2
B
C26
C23
C14
FM-OSC.
109MC
A13
C18
A7
10.7MC
PRI.
C9
C1
C10
C27
C2
C8
C20
A
C31
C21
C11
C7
C24
C4
C28
C3
C30
C29
C16
A9
10.7MC
A2
455KC
C17
C12
A10
10.7MC
C5
C6


R1
R16
R14
R13
R18
R19
L2
L8
R7
R10
R6
L7
L6
L10
R9
L5
L3
L4
R2
R4
R17
R23
R20
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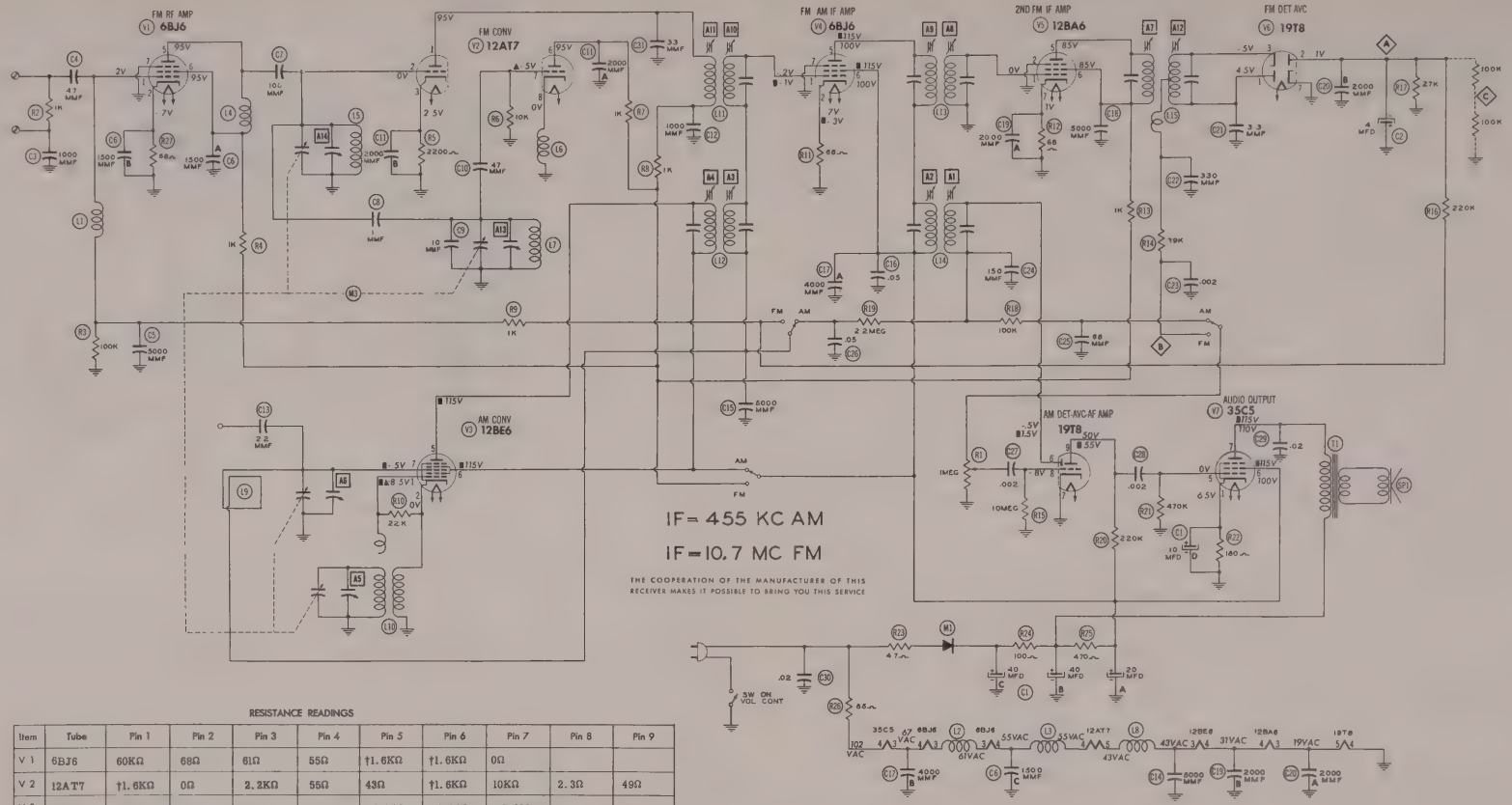
R25
R11
R8
R24
R26
R27
R3
L1
R5



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	60KΩ	68Ω	61Ω	55Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 2	12AT7	†1.6KΩ	0Ω	2.2KΩ	55Ω	43Ω	†1.6KΩ	10KΩ	2.3Ω	49Ω
V 3	12BE6	22KΩ	.7Ω	43Ω	31Ω	■†570Ω	■†570Ω	■3.3Meg		
V 4	6BJ6	60KΩ	68	61Ω	67Ω	†570Ω	†570Ω	0Ω		
V 5	12BA6	.7Ω	0Ω	19Ω	31Ω	†1.6KΩ	†1.6KΩ	68Ω		
V 6	19T8	1Meg	27KΩ	1Meg	0Ω	19Ω	■1.1Meg	0Ω	10Meg	†220KΩ
V 7	35C5	180Ω	470KΩ	67Ω	102Ω	470KΩ	†570Ω	†270Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
† MEASURED FROM OUTPUT OF M1
■ MEASURED IN "AM" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amplifier	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	12BE6	12BE6	7CH	
V4	FM AM IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd FM IF Amp.	12BA6	12BA6	7BK	
V6	Det. -AVC-AF Amp.	19T8	19T8	9E	
V7	Audio Output	35C5	35C5	7CV	

CAPACITORS

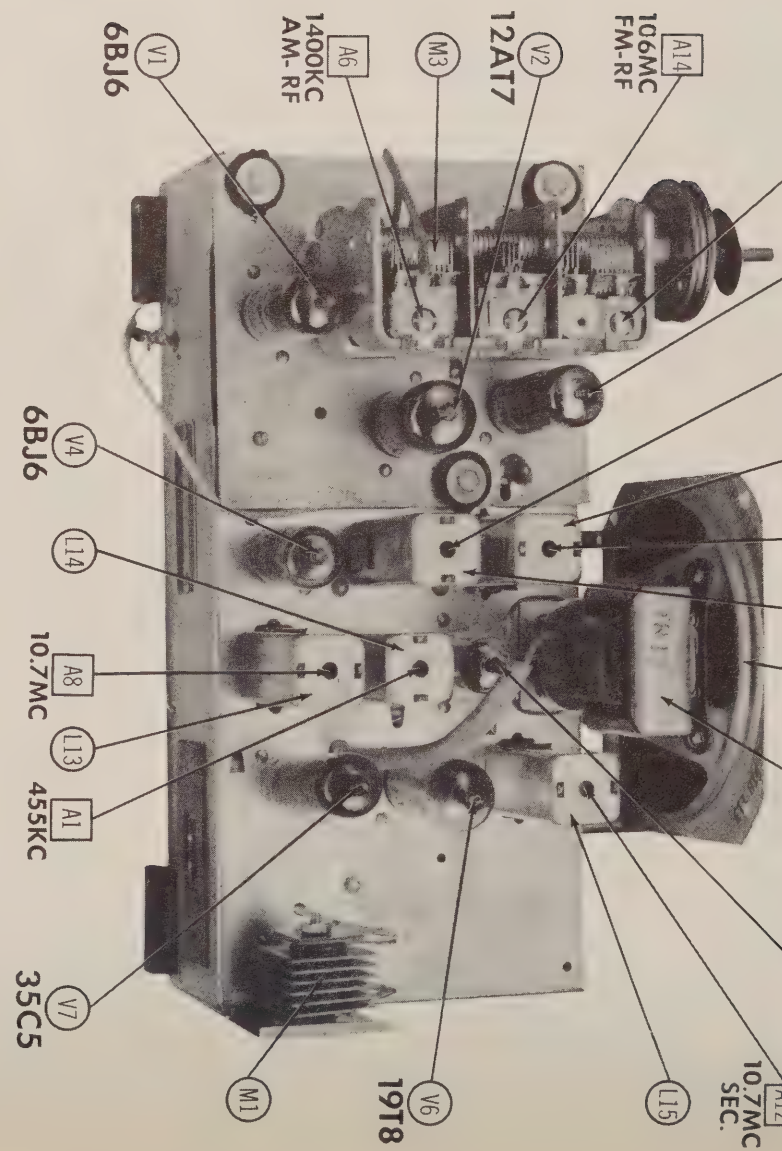
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150	CE-23-D	PRS150/40-40-40		EDL44215		TVA-3451	Filter (Red)
B	40	150		PRS25/10		BR102A		TVA-1204	Filter (Green)
C	40	150							Decoupling (Blue)
D	10	25							Output Cathode (Yellow)
C2	4	50	CE-19	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C3	1000		CC-102-SP	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Ant. Isolation
C4	47		CC-04708	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM RF Coupling
C5	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM AVC Filter
C6A	1500		CC-3-0	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Decoupling
B	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Cathode
C	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Fil.
C7	100		CC-101-7	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C8	1		CSP-1	1468-000001	TCZ-1		NP0K-010		FM Osc. Coupling
C9	10	500	CMS-010-8	1469-00001		5R5Q1		MS-41	Fixed Padder
C10	47		CC-04708	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM Osc. Grid Cap.
C11A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	FM Osc. Plate Bypass
B	2000					1W5D2			FM Mixer Cathode
C12	1000		CC-102-SP	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Mixer Plate Dec.
C13	2.2		CC-2.2-7		TCZ-2.2		NP0K-2R2		AM RF Coupling
C14	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AM Conv. Fil.
C15	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C16	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	1st IF Amp. Dec.
C17A	4000		CC-2-2	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	1st IF Amp. Dec.
B	4000				D6-402	1D5D4			1st IF Amp. Fil.
C18	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Amp. Dec.
C19A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	2nd FM IF Amp. Cathode
B	2000					1W5D2			2nd FM IF Amp. Fil.
C20A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	Ratio Det. Fil.
B	2000					1W5D2			RF Bypass
C21	3.3		CC-3.3-11		TCZ-3.3		NP0K-3R3		Balancing Cap.
C22	330	500	CM-331-8	1468-00035	D6-331		GP2K-331	1FM-335	Diode Load Cap.
C23	.002	400	CP-202-2	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C24	150	500	CM-151-1	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	Diode RF Filter
C25	68		CC-068-7	SI68	D6-680	5W5Q7	GP1K-680	5GA-Q68	Diode RF Filter
C26	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C27	.002	600	CP-202-2	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C28	.002	600	CP-202-2	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C29	.02	800	CP-203-20	P1088-02		PTE16S2		MB-D2	Audio Output Plate
C30	.02	400	CPM-203-1	P488-02		PTE4S2		4TM-S2	Line Filter
C31	33	500	CMS-033-9						Fixed Trimmer

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	1/2	VC-23	Q13-137	AG-63-Z	B-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
R2	1000Ω	1/2	RC-102-1	BTS-1000	Antenna Shunt
R3	100KΩ	1/2	RC-104-1	BTS-100K	RF Amp. Grid
R4	1000Ω	1/2	RC-102-1	BTS-1000	FM RF Amp. Decoupling
R5	2200Ω	1	RC-222-2	BTA-2200	FM Mixer Cathode
R6	10KΩ	1/2	RC-103-2		FM Osc. Grid
R7	1000Ω	1/2	RC-102-1	BTS-1000	FM Osc. Plate
R8	1000Ω	1/2	RC-102-1	BTS-1000	FM Converter Decoupling
R9	1000Ω	1/2	RC-102-1	BTS-1000	AVC Network
R10	22KΩ	1/2	RC-223-1		AM Osc. Grid
R11	68Ω	1/2	RC-680-2		IF Amp. Cathode
R12	68Ω	1/2	RC-680-2		FM IF Amp. Cathode
R13	1000Ω	1/2	RC-102-1	BTS-1000	2nd FM IF Amp. Decoupling
R14	39KΩ	1/2	RC-393-2		De-emphasis
R15	10Meg	1/2	RC-106-1	BTS-10Meg	AF Amp. Grid
R16	220KΩ	1/2	RC-224-1	BTS-220K	AVC Network
R17	27KΩ	1/2	RC-273-2	BTS-27K	Ratio Det. Diode Load
R18	100KΩ	1/2	RC-104-1	BTS-100K	Diode Filter
R19	2.2Meg	1	RC-225-1	BTA-2.2Meg	AVC Network
R20	220KΩ	1/2	RC-224-1	BTS-220K	AF Amp. Plate
R21	470KΩ	1/2	RC-474-1	BTS-470K	Output Grid
R22	180Ω	1/2	RC-181-2	BTS-180	Output Cathode
R23	4.7Ω	1	RC-47A-5		Rectifier Ballast
R24	100Ω	2	RW-101-8	BW-2-100	Filter - Wire Wound
R25	470Ω	2	RW-2-470	BW-2-470	Filter - Wire Wound
R26	85Ω	5	RP-6		Series Filament - Wire Wound
R27	68Ω	1/2	RC-680-2		FM RF Amp. Cathode

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.4KΩ	3.5Ω	195Ω	.7Ω	Part of SP-49-1-D	A-3876 ①	A-2928 ①	RO-2 ①	① Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.5Ω	SP-49-1-D	4J4 ①	4A07 ②	② Use Universal Mounting Bracket. ① Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP1B	4 in.	9/16 in.				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MERIT PART No.	
L1	RF Choke	.1Ω		LC-12		
L2	Fil. Choke	.2Ω		LC-13		
L3	Fil. Choke	.2Ω		LC-13		
L4	RF Choke	1.8Ω		LC-14		
L5	FM RF Coil	0Ω		LC-15		
L6	Cath. Choke	2.2Ω		LC-16		
L7	FM Osc. Coil	.0Ω		LC-11		
L8	Fil. Choke	.2Ω		LC-13		
L9	AM Loop Ant.	3.3Ω		LP-23-D		
L10	AM Osc. Coil	.5Ω	6.3Ω	LC-20		
L11	1st FM IF	.5Ω	.5Ω	LF-30	FM-254	
L12	1st AM IF	15Ω	15Ω	LF-32	BC-352	
L13	2nd FM IF	.5Ω	.5Ω	LF-34	FM-254	
L14	2nd AM IF	10.5Ω	10.5Ω	LF-35	BC-352	
L15	Ratio Det. Trans.	1.5Ω	.6Ω	LF-33	FM-255	Tap ⓐ .6Ω

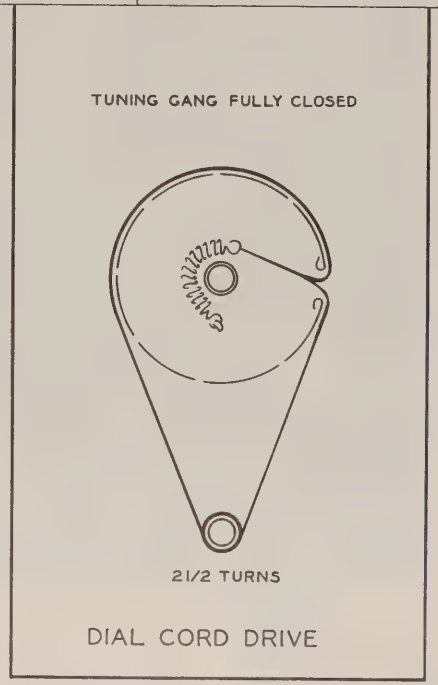
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.17ADC	SR-2-D	NC-5	5M1	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	Switch	SW-15D	Band
M3	2 Gang Var. Cap.	CV-23-D	AM Sections (19-399MMF, 29-182MMF)
A13	Trimmer	TA-3	FM Osc. Adj.
	Cabinet	CB-159-M	Model 25 (Mahogany)
	Cabinet	CB-159-I	Model 27 (Ivory)
	Knob	KN-39-2-D	Station Indicator (Mahogany)
	Knob	KN-39-3-D	Station Indicator (Ivory)
	Knob	KN-40-D	Control



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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

AM ALIGNMENT

Volume control should be a t maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7, (grid), of 12BE6, (V3). Low side to chassis.	455KC (400∿mod)	AM (CCW)	Tuning Gang fully open.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	"	Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	"	Tune for max. output.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 1, (grid), of 6BJ6, (V4) Low side to chassis.	10.7MC (unmod)	FM (CW)	Tuning gang fully open.	DC probe to point (A). Common to Chassis.	A7, A8 A9	Adjust for max. deflection.
5.	"	High isde to pin 2, (grid), of 12AT7, (V2 Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1, (grid), of 6BJ6, (V4). Low side to chassis.	10.7MC (450KC Swp)	FM (CW)	Point of non-interference.	Vert. Amp. to point (A). Low side to chassis.	A7, A8, A9.	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1
5.	"	High side to pin 2, (grid), of 12 AT7, (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistor	High side thru 300Ω to ungrounded FM ant. terminal. Low side to chassis.	109MC (unmod)	FM	Tuning gang fully open.	DC probe to point (A). Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	87MC	"	Tuning gang fully closed.	"	L7	Check coil with a tuning wand. If necessary expand or compress coils turns for maximum deflection. If L7 is changed, repeat steps 7 and 8 until no further improvement can be made.
9.	"	"	106MC	"	Tune for max. deflection.	"	A14	Adjust for maximum deflection.
10.	"	"	90MC	"	"	"	L5	Check coil with a tuning wand. If necessary expand or compress coil turns for max. deflection. If L5 is changed, repeat steps 9 and 10 until no further improvement can be made.

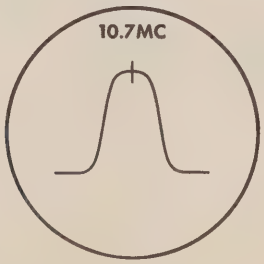

FIG. 1

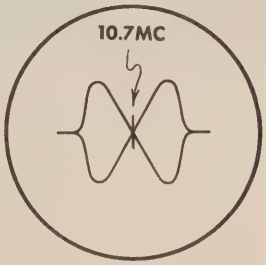

FIG. 2

PHOTOFACT* Folder

*TRADE MARK

**SILVERTONE MODELS 102A (Ch. 549.100-3, -7)
168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9)
176-19 (Ch. 549.100-6)**

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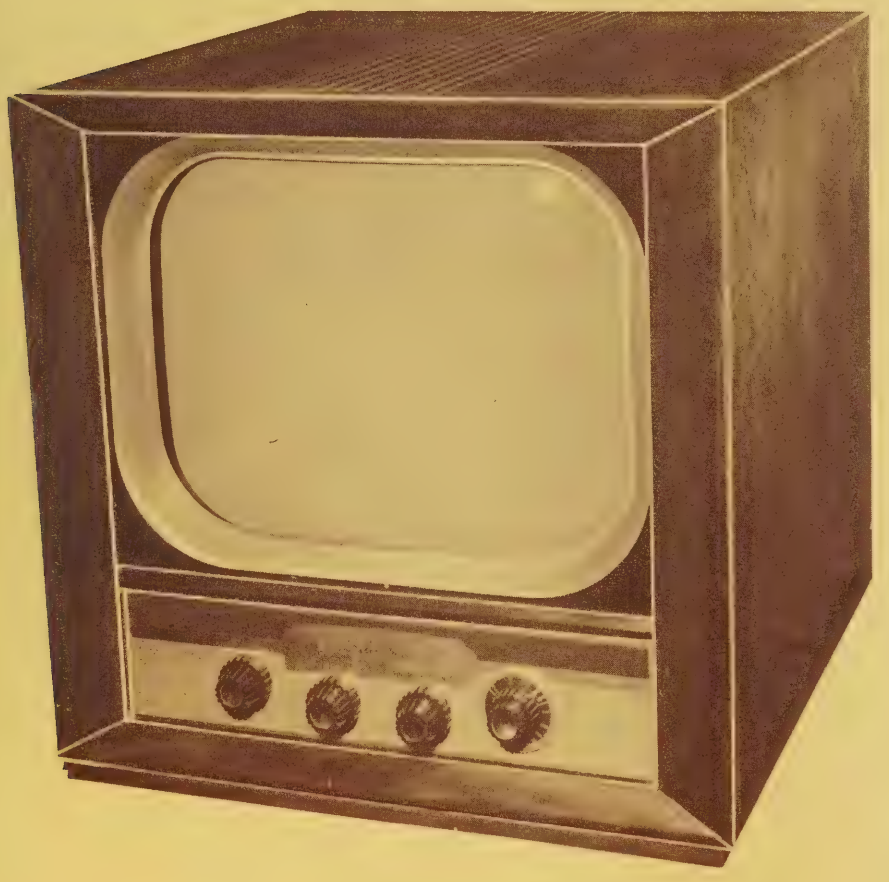

MODEL 102-A

SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)

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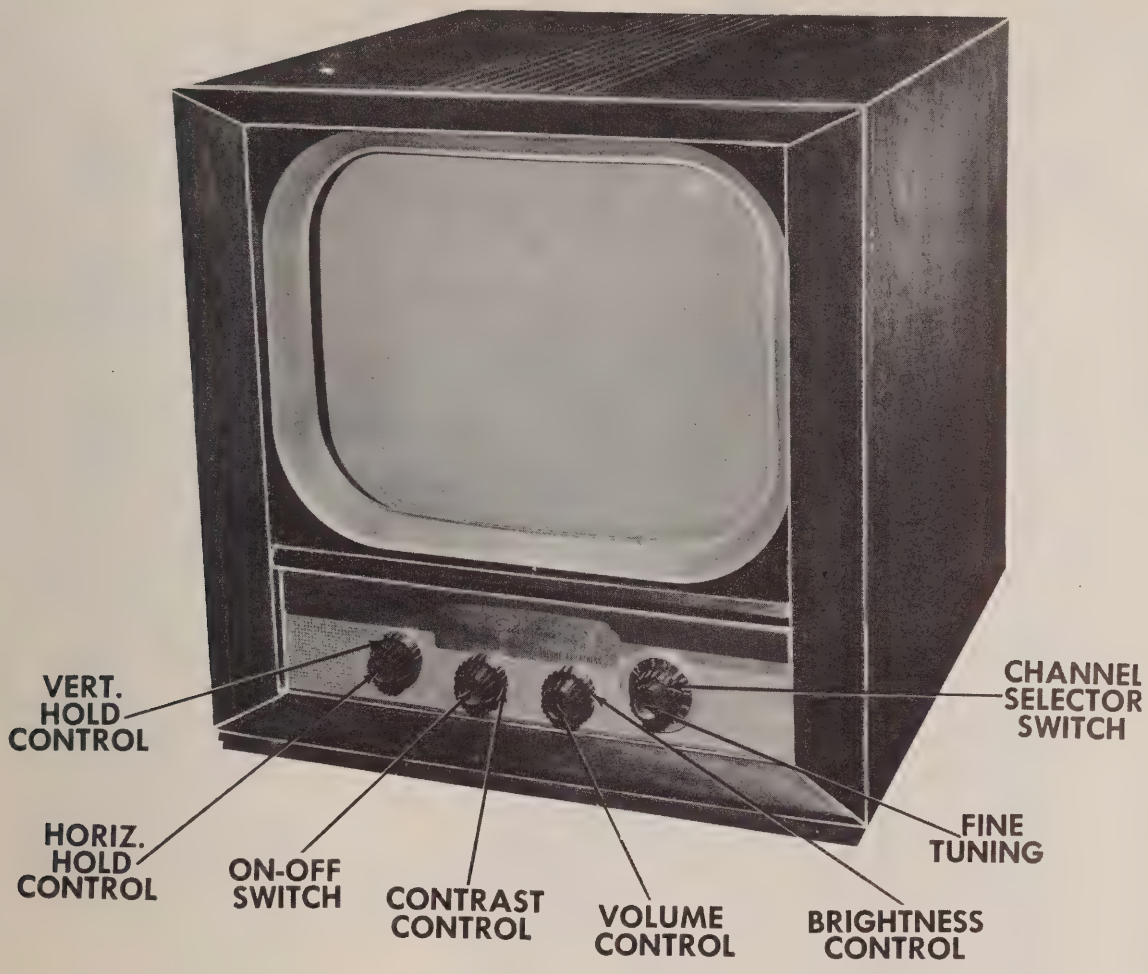
SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)



SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)

SILVERTONE MODEL 102-A

TRADE NAME	Silvertone Models 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5-8-9) 176-19 (Ch. 549.100-6)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC 60 Cycle RATING 1.8 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13 (continuous tuning)

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing 10
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Photos (Cont,)
Chassis - Top View 3
RF Tuner 10
Resistor and Inductor Identification 15, 16
Resistance Measurements 8
Schematic 2
Tube Placement Charts 5

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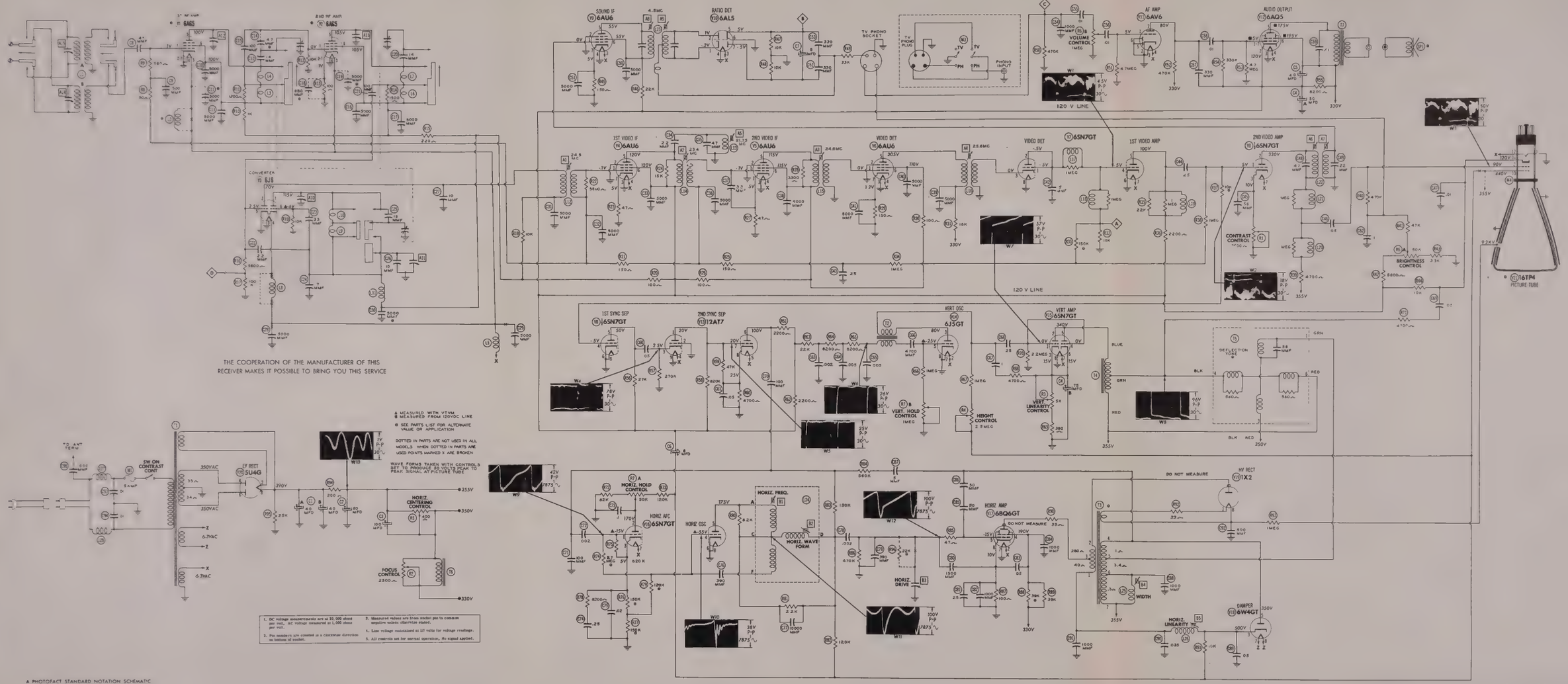
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM.
B MEASURED FROM 120VDC LINE
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative vacuum chassis symbol.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation. No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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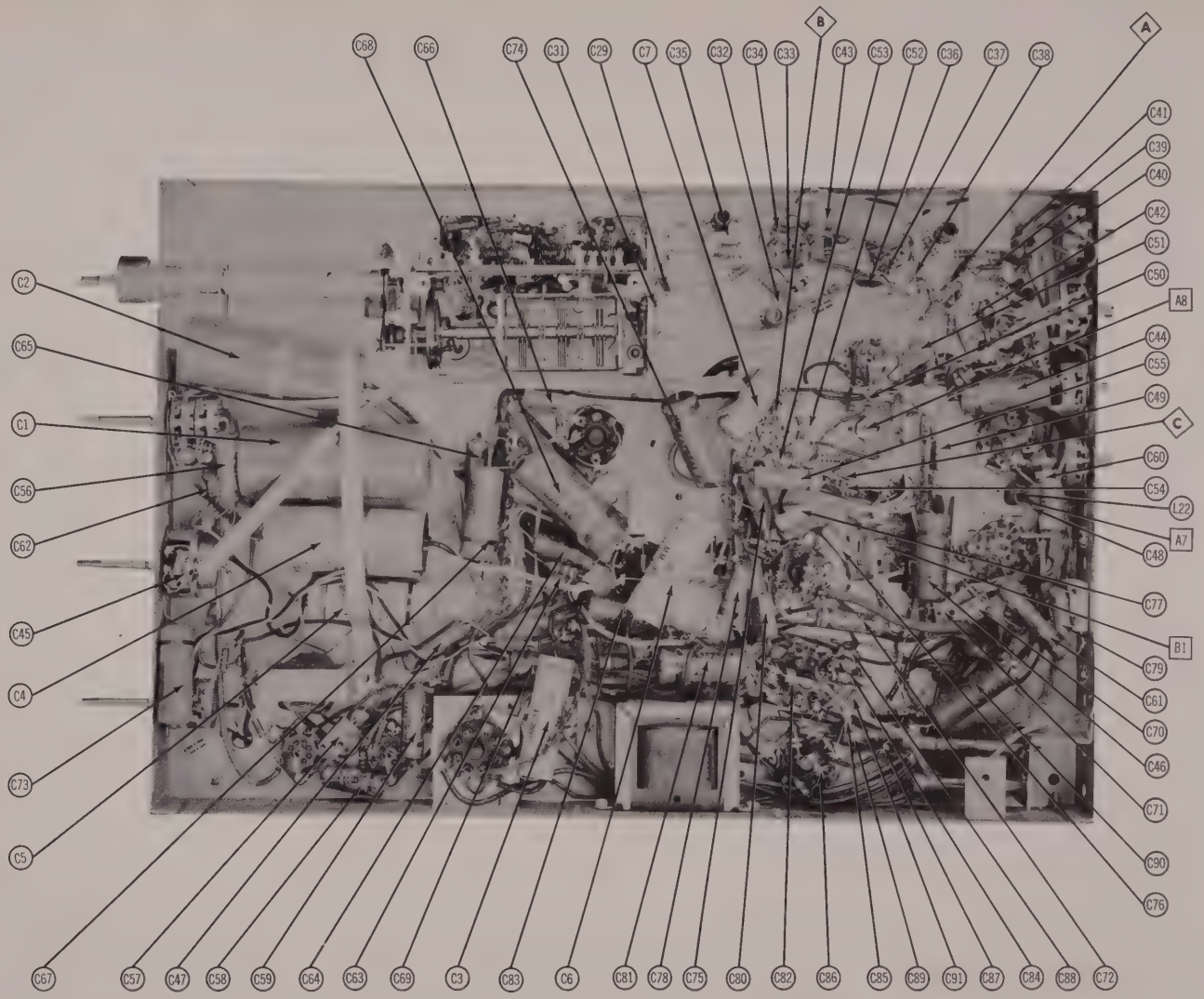
SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

BOTTOM VIEW

TOP VIEW

TUBE PLACEMENT CHART

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V16), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V3). Low side to chassis.	24.5MC (unmod)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.4MC	"	"	A2	"
3.	"	"	24.6MC	"	"	A3	"
4.	"	"	25.6MC	"	"	A4	"
5.	"	"	21.75MC	"	"	A5	Adjust for MINIMUM deflection. Repeat step 2.

OVERALL VIDEO IF RESPONSE CHECK

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V3). Low side to chassis.	24MC (10MC Swp)	21.75MC 26.25MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (unmod)	Any channel not used locally.	DC probe to point (B). Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any channel not used locally.	Vert. Amp. to point (B). Low side to chassis.	A6, A7, A8	Disconnect stabilizor capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A9	Reconnect C7. Adjust A9 so 4.5MC occurs AT center of crossover lines as per fig. 3. SLIGHTLY RETOUCH A8 for maximum amplitude and straightness of crossover lines.

RF TUNER ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the negative lead of a 3 volt battery to the AGC terminal on the tuner, connect the positive lead to chassis.
The use of two marker generators is required to align this tuner.
Marker generator No. 1 is connected thru 2 or 3 MMF capacitor across the antenna terminals. Marker generator No. 2 is connected thru a 203MMF capacitor to pin 1, (grid), of the first IF Amp. Marker generator is used to supply a video IF carrier reference marker, (26.25MC). Since the input of the oscilloscope must be switched between a 10KΩ resistor connected to point (D) and a detector network (fig. 4) connected to the grid fo the first video IF tube, it is recommended that a single pole double throw switch mounted as closely as possible to the oscilloscope terminals be used to switch the input of the oscilloscope. All connecting leads should be shielded and kept as short as possible.
Remove the second video IF tube, (V5), from its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

HIGH BAND OSCILLATOR ALIGNMENT

Turn the band switch to "High band", (counter-clockwise rotation of shaft.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	212.75MC	Turn tuning gang fully open.	Vert. Amp. thru detector, (fig. 4), to pin 1, (grid), of V4. Low side to chassis.	A10	Adjust so markers coincide on response curve.
10.	"	"	177MC (10MC Swp)	172.75MC	Turn tuning gang fully closed.	"	L10	Remove tuner bottom cover. With a non-metallic pick, vary the turn spacing of L10 until markers coincide on response curve. Replace bottom cover. If markers separate make compromise adjustment of L10 so markers coincide with bottom cover in place. Repeat steps 9 and 10 until high band oscillator covers the correct range.

LOW BAND OSCILLATOR ALIGNMENT

Turn the band switch to "Lowband," (clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	84.75MC	Turn tuning gang fully open.	Vert. Amp. thru detector (fig. 4) to pin 1 (grid), of V4. Low side to chassis.	L9	Remove bottom cover. With a non-metallic pick, vary turns of L9 until markers coincide on response curve.
12.	"	"	57MC (10MC Swp)	54.25MC	Turn tuning gang fully closed.	"	A11	Adjust so markers coincide on response curve. Repeat steps 11 and 12 until low band oscillator covers the proper range.

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND RF ALIGNMENT

For step 13 set the tuning control to channel 13 by tuning marker generator No. 1 to the channel 13 video carrier frequency, (211.25MC) and tuning the tuning control untilthe marker coincides with the reference marker, (26.25MC). The scope is connected to the detector, (fig. 4) at the tuner output, (pin 1 of V4).
For step 14 set the tuning control to channel 7 by injecting the channel 7 video carrier, (175.25MC) and tuning for coincidence of marker with reference marker, (26.25MC).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13 See note above.	Vert. Amp. thru 10KΩ to point Ⓓ. Low side to chassis.	A12, A13	Adjust for response curve similar to fig. 5. A12 is adjusted for maximum amplitude of response in the vicinity of the video marker. A13 is adjusted in the vicinity of the sound marker.
14.	"	"	177MC (10MC Swp)	175.25MC 179.75MC	7 See note above.	"	L4, A7	Alter turn spacing of coils for response similar to fig. 5. L4 is tuned in the vicinity of the video marker. L7 is tuned in the vicinity of the sound marker. Repeat steps 13 & 14 until response is satisfactory across the high band channels.

LOW BAND RF ALIGNMENT

For step 15 set the tuning control to channel 6 by feeding the channel 6 video carrier, (83.25MC) into the antenna and tuning for coincidence of the marker with the reference marker.
For step 16 tune the tuner to channel 2, using the same system, with channel 2 video marker, (55.25MC).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. thru 10KΩ to point Ⓓ. Low side to chassis.	L3, L6	Adjust for response curve similar to fig. 5. L3 is tuned in the vicinity of the video marker. L6 is tuned in the vicinity of the sound marker.
16.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"		Check the response curve on channel 2. If necessary make compromise adjustments of L3 and L6 to render acceptable response across the low band channels.

ANTENNA ALIGNMENT

The antenna adjustment screws, (A14 and A15,) have been properly adjusted at the factory and are very stable.
These adjustments should not be attempted unless they have been accidentallyaltered or tampered with.
A14 is adjusted by setting the equipment up as in step 13 and adjusting A14 for maximum amplitude without reduction of band width.
A15 is adjusted in the same manner with equipment set up as in step 15.

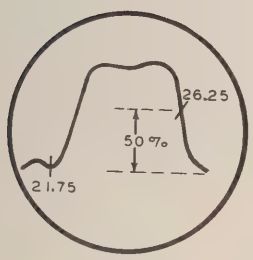


FIG. 1

FIG. 2

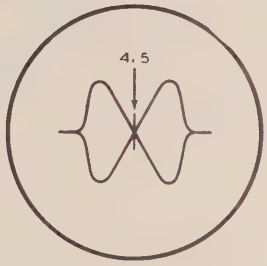


FIG. 3

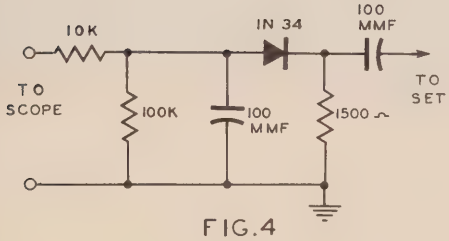


FIG. 4

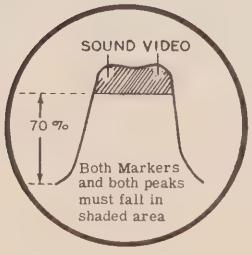


FIG. 5

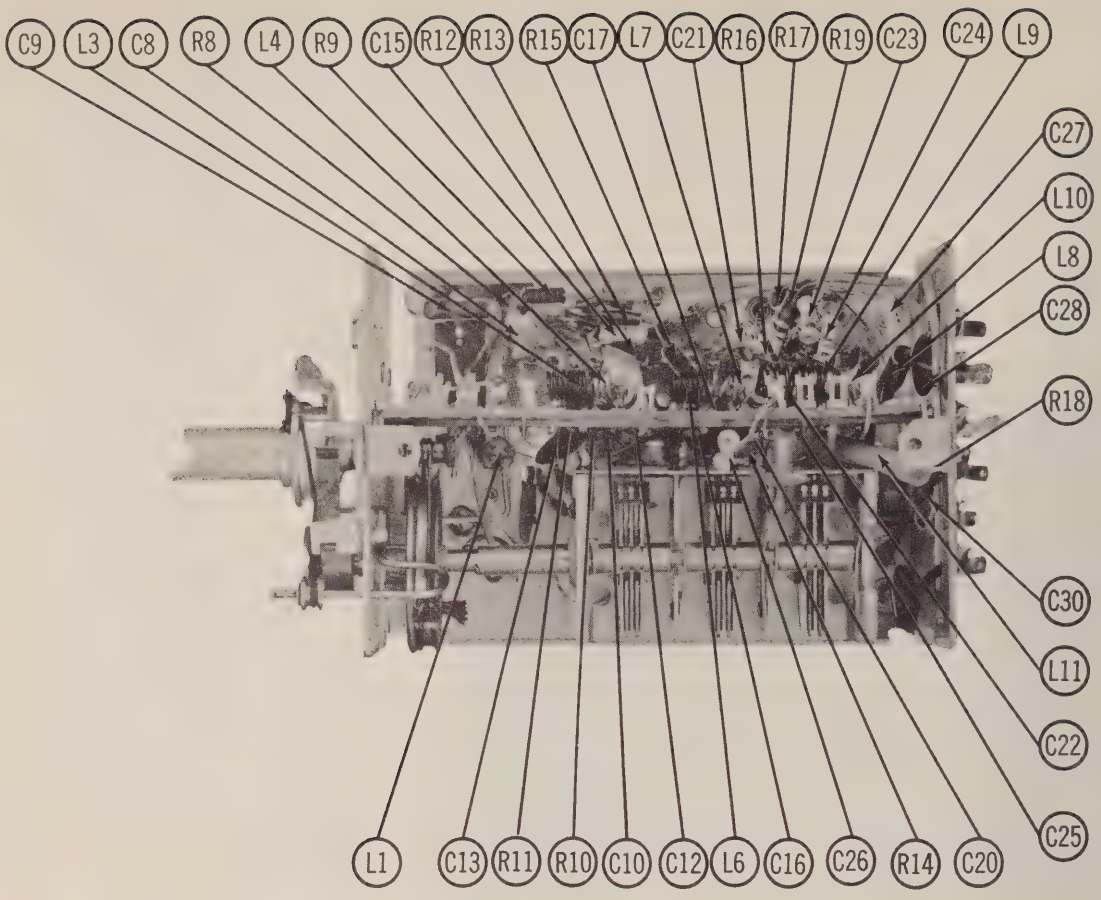
SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

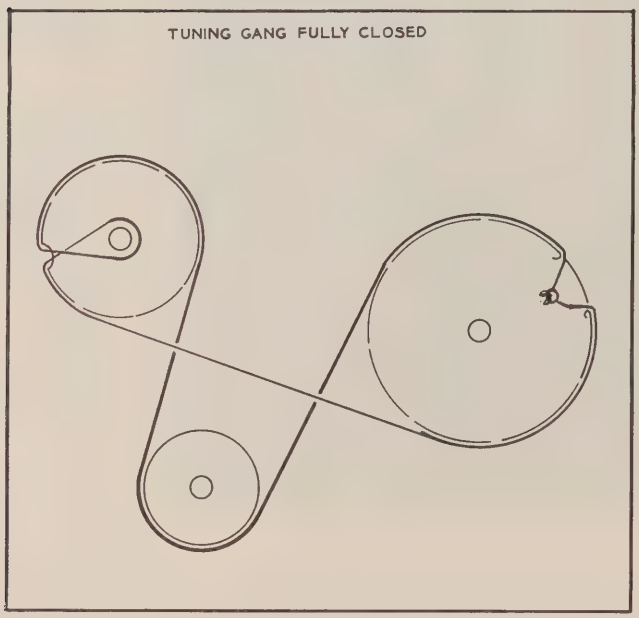
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.2Meg	0Ω	.1Ω	0Ω	■1.3KΩ	■1.3KΩ	0Ω		
V 2	6BC5	10KΩ	100Ω	.1Ω	0Ω	■320Ω	■320Ω	100Ω		
V 3	6J6	■100Ω	■10KΩ	0Ω	.1Ω	105KΩ	10KΩ	0Ω		
V 4	6AU6	1.1Meg	0Ω	0Ω	.1Ω	■.2Ω	■0Ω	47Ω		
V 5	6AU6	1.1Meg	0Ω	0Ω	.1Ω	■100Ω	■100Ω	47Ω		
V 6	6AU6	.2Ω	0Ω	0Ω	.1Ω	†18KΩ	■200Ω	150Ω		
V 7	6SN7GT	10KΩ	10KΩ	.3Ω	10KΩ	■2.2KΩ	0Ω	.1Ω	0Ω	
V 8	6SN7GT	1.1Meg	†4.9KΩ	1.6KΩ	1.2Meg	■27KΩ	0Ω	.1Ω	0Ω	
V 9	6AU6	.6Ω	0Ω	.1Ω	0Ω	■22KΩ	■22KΩ	150Ω		
V 10	6AL5	500KΩ	500KΩ	.1Ω	0Ω	10KΩ	0Ω	10KΩ		
V 11	6AV6	4.7Meg	0Ω	0Ω	.1Ω	▯Ω	0Ω	†470KΩ		
V 12	6AQ5	■330KΩ	25KΩ	0Ω	.1Ω	†765Ω	†400Ω	■330KΩ		
V 13	12AT7	50KΩ	0Ω	270KΩ	.1Ω	.1Ω	■4.4KΩ	50KΩ	4.7KΩ	0Ω
V 14	6J5GT	0Ω	.1Ω	#2.5Meg	750KΩ	1.7Meg	INF	0Ω	0Ω	
V 15	6SN7GT	2.2Meg	†1.3KΩ	1.9KΩ	2.2Meg	†1.3KΩ	1.9KΩ	.1Ω	0Ω	
V 16	6SN7GT	1Meg	#140KΩ	300KΩ	270KΩ	#130KΩ	0Ω	.1Ω	0Ω	
V 17	6BQ6GT	INF	.1Ω	†180Ω	†19KΩ	470KΩ	#20Ω	0Ω	100Ω	Top Cap #90Ω
V 18	6W4GT	#10KΩ	0Ω	250KΩ	INF	†200Ω	#130KΩ	¶.1Ω	¶0Ω	
V 19	1X2	PINS 1 - 9	HAVE INF RESISTANCE							Top Cap #340Ω
V 20	5U4G	INF	22KΩ	†200Ω	35Ω	INF	34Ω	INF	22KΩ	
V 21	16TP4	0Ω	■460KΩ	Pin 10 #10KΩ	Pin11 ■10KΩ	Pin 12 .1Ω				

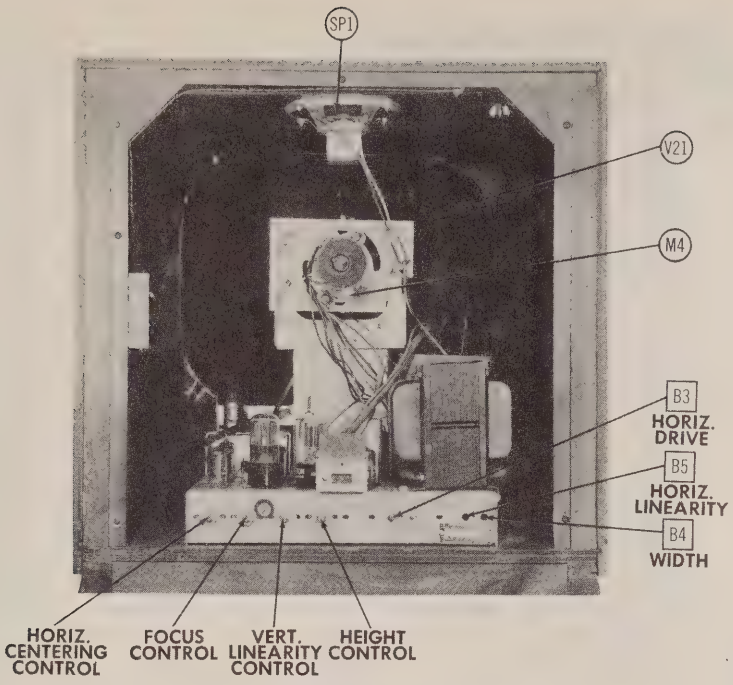
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
■ MEASURED FROM 120 VDC LINE
¶ MEASURED FROM PIN 8 OF V18



RF TUNER



DIAL CORD STRINGING



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short across terminals C and D of L24.

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal-hold control to fully clockwise.

Adjust the horizontal frequency adjustment, (B1), until the blanking bar begins to move in to the picture from the left.

Remove the short from L24 and readjust B1, if necessary, to synchronize the picture.

Connect the vertical input lead of an oscilloscope through 47KΩ resistor to terminal C of L24.

Adjust the waveform slug, (B2), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 6. If necessary during adjustment of B2, adjust B1 to keep the picture synchronized .

Readjust B1 intil the blanking bar again moves into the picture.

Adjust the horizontal drive trimmer, (B3), clockwise as far as possible without crowding or bright vertical lines appearing in the picture. Turn the control counter-clockwise to synchronize the picture.

Adjust the width slug, (B4), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B5), until the picture is symmetrical from left to right.

Since both width and horizontal linearity are effected by the drive trimmer it may be necessary to adjust them alternately for optimum results.

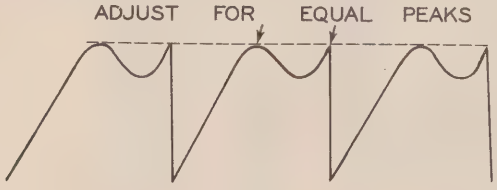


FIG. 6

DISASSEMBLY INSTRUCTIONS

1. Remove 7 wood screws and rear cover.
2. Remove 8 push-on type control knobs from front panel.
3. Remove 4 speaker mounting nuts and speaker.
4. Remove antenna strip.
5. Remove 4 chassis bolts. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

DENVER, COLO.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	1st RF Amp.	6BC5	6BC5	7BD	
B	1st RF Amp.	6AG5	6AG5	7BD	
V2A	2nd RF Amp	6BC5	6BC5	7BD	
B	2nd RF Amp.	6AG5	6AG5	7BD	
V3	Converter	6J6	6J6	7BF	
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5	2nd Video IF Amp.	6AU6	6AU6	7BK	
V6	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7A	Video Det.-1st Video Amp	6SN7GT	6SN7GT	8BD	
B	Video Det -1st Video Amp.	12AU7	12AU7	9A	
V8	2nd Video Amp. - 1st Sync Sep.	6SN7GT	6SN7GT	8BD	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp	6AV6	6AV6	7BT	
V12	Audio Output	6AG5	6AG5	7BD	
V13A	Sync Amp. - 2nd Sync Sep.	12AT7	12AT7	9A	
B	2nd Sync. Sep. - 1st Sync Amp.	12AU7	12AU7	9A	Not used in model # 168-16
V14	Vert. Osc.	6J5GT	6J5GT	6Q	
V15	Vert. Amp.	6SN7GT	6SN7GT	8BD	
V16	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Amp.	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rect.	1X2	1X2	9Y	
V20	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V21A	16TP4 ①	16TP4	16KP4	12D	* Use single magnet Ion Trap and change high voltage connector.
B	16GP4 ③	16GP4	16DP4A *	12D	① Used in model 102A only.
C	16RP4 ③	16RP4	16KP4		② Used in model 175-16, 175-16A
D	19AP4A ④				③ Used in model 168-16, 102, and 138
					④ Used in model 176-19 only.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	M45B159	PRS450/40-40		UPT4445		TVA-2740	Filter (Red)
B	40	450							Filter (Red)
C2	80	450	M45B166	PRS450/40-20		UP6045		TVA-1716	Filter
C3	100	10	M45B170	PRS12/100		BRH212A		TVA-1130	Horiz. Cent. Bypass
C4A	50	200	M45B165	PRS250/40		UPT5025		TVL-2818	Decoupling (Red)
B	75	50		PRS50/100					Vert. Amp. Cathode (Yellow)
C5	40	250	M45B171	PRS250/40		BR2045A		TVA-1511	Audio Output Dec.
C6	8	475	M45A103	PRS500/8		BR550A		TVA-1902	Decoupling
C7	5	50	M45A109	PRS50/4		BR550		TVA-1303	Stabilizing Cap.
C8	47		M47X20C5500J	S147	D6-470		GP1K-470	5GA-Q47	RF Coupling
C9	1500		M47X50CJ152J	SU500	D6-152		GP2L-152	5HK-D15	AGC Filter
C10	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	1st RF Amp. Dec.
C11	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	1st RF Amp. Fil. *
C12	14		M47X20CK140J				Fixed Trimmer		
C13	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	1st RF Amp. Dec.
C14	4.7		M47A160-6	SI4.7NP0	TCZ-4.7		NP0K-4R7		RF Coupling *
C15	100		M47B20101K5	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C16	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	2nd RF Amp. Dec.
C17	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	2nd RF Amp. Dec.
C18	680		M47B20681K5	SI680	D6-681		GP2L-681	5GA-T68	2nd RF Amp. Cathode *
C19	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	2nd RF Amp. Fil. *
C20	14		M47X20CK140J				NP0K-140		Fixed Trimmer
C21	100		M47B20101K5	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C22	2.2		M47X20CK022J		TCZ-2.2		NP0K-2R2		Osc. Coupling
C23	33		M47X20CK330J	SI33	D6-330		GP1K-330	5GA-Q33	Osc. Grid Cap.
C24	17		M47X20CK180J				N470K-170		Fixed Trimmer
C25	19		M47X20CK190J				NP0K-190		Fixed Trimmer
C26	10			SI10NT50	TCN-10		N750K-100	5TCU-Q1	Fixed Padder
C27	10			SI10NT50	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C28	5000		M47A168	BPD-005	DD-502		81L-005	5HK-D5	Fil. Bypass
C29	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st Video IF Dec.
C30	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st Video IF Dec.
C31	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	Mixer Plate Dec.
C32	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AGC Filter
C33	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st Video IF Dec.
C34	2.2		M47A160-4		TCZ-2.2		NP0K-2R2		IF Coupling
C35	47	500	M47X20SL470K	1469-00005		SR5Q5		MS-46	Fixed Trimmer
C36	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AGC Filter
C37	3.3		M47A160-5	SI3.3NP0	TCZ-3.3		NP0K-3R3		Neutralizing Cap.
C38	5000		M47A168	BPD-005	DD-502	1D5D6	81L-005	5HK-D5	2nd Video IF Dec.
C39	5000		M47A168	BPD-005	DD-502	1D5D6	81L-005	5HK-D5	3rd Video IF Plate
C40	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	3rd Video IF Screen
C41	5000		M47A168	BPD-005	DD-502	1D6D5	81L-005	5HK-D5	3rd Video IF Cathode
C42	5		M47X20U050M	SI5N750			N750K-050		Video Det. Filter
C43	.25	200	M46AT254J	P488-25		GT2P25		2TM-P25	AGC Filter
C44	.25	200	M46AT254J	P488-25		GT2P25		2TM-P25	Video Coupling
C45	56	500	M47X20A560M	SI56	D6-560		GP1K-560	MS-46	Conirast Cont. Shunt
C46	.05	600	M46AY503J	P588-05	DF-503		PTE4S5	6TM-S5	Video Coupling
C47	.01	200	M46AC103J	P488-01	D6-103		PTE4S1	4TM-S1	Picture Tube Cathode
C48	47			SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C49	22	500	M47X20A220K	1469-000025		5R5Q25		MS-425	Fixed Trimmer
C50	5000		M47A168	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	Sound IF Dec.
C51	5000		M47A168	BPD-005	DD-502	1D6D6	81L-005	5HK-D5	Sound IF Cathode

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52	330		M47B20331K5	SI330	D6-331			GP2K-331	Diode Load Cap.
C53	330		M47B20331K5	SI330	D6-331			5GA-T33	Diode Load Cap.
C54	1000		M47B20A102M5	SI1000	D6-102	1W5DI	GP2L-102	5HK-D1	De-emphasis
C55	.01	200	M46AU103J	P488-01	D6-103	PTE4P1	GP2-333-103	4TM-S1	Audio Coupling
C56	.01	200	M46AU103J	P488-01	D6-103	PTE4P1	GP2-333-103	4TM-S1	Audio Coupling
C57	330	500	M47X20A331M	1468-00035	D6-331		GP2K-331	1FM-335	AF Amp. Plate
C58	.01	600	M46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C59	.01	600	M46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C60	.05	200	M46AU503J	P288-05	DF-503	PTE4S5		2TM-S5	Sync Coupling
C61	.05	200	M46AU503J	P288-05	DF-503	PTE4S5		2TM-S5	Sync. Amp. Cathode
C62	.1	200	M46AU104J	P288-1	DF-104	PTE4P1		2TM-P1	RF Bypass
C63	.002	600	M46AZ202J	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net.
C64	.005	600	M46AU502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.
C65	.005	600	M46AU502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.
C66	4700	500	M47X35A472M	1484-005				MS-25	Vert. Osc. Grid Cap.
C67	.1	600	M46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C68	.25	600	M46AX254J	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C69	.05	600	M46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Sweep Coupling
C70	100	500	M47X20B101K	1469-0001		5RST1		MS-31	Horiz. Sync. Coupling
C71	100	500	M47X20B101M	1469-0001		5RST1		MS-31	Voltage Divider
C72	.002	800	M46AZ202J	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Horiz. Sync Coupling
C73	.1	600	M46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	Horizontal AFC Plate
C74	.1	200	M46AU104J	P488-25		GT2P25		2TM-P25	Horiz. AFC Filter
C75	.02	600	M46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	Horiz. AFC Filter
C76	390	500	M47A226	1469-2*04		5RS7*4		MS-34	Horiz. Osc. Grid Cap.
C77	1000	500	M47X35A103K					MS-11	Fixed Trimmer
C78	.002	800	M46AZ202J	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Horiz. Sweep Coupling
C79	390	500	M47X20A391M	1469-0004		5RS7*4		MS-34	Fixed Trimmer
C80	1500	500	M47X30B152M	1464-0015		1B5DI5			Horiz. Discharge
C81	.25	200	M46AT254J	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C82	1000		M47B20A102M5	SI1000	D6 -02	1W5DI	GP2L-102	5HK-DI	Horiz. Output Cathode
C83	.05	600	M46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C84	1000		M47B20A102M5	SI1000	D6-102	1W5DI	GP2L-102	5HK-DI	Horiz. Output Screen
C85	50		M47B20470K5	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Horiz. Feedback
C86	50		M47B20470K5	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Horiz. Feedback
C87	5		M47X20U050M	SI5N750			N750K-050		Horiz. Feedback
C88	1000		M47B20A102M5	SI1000	D6-102	1W5DI	GP2L-102	5HK-DI	Fixed Trimmer
C89	.05	600	M46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Damper Filter
C90	.035	600	M46AY353J						Damper Filter
C91	1000		M47B20A102M5	SI1000	D6-102		GP2L-102	5HK-DI	Damper Filter
C92	500	20000	M47A216		HV3-500				HV Filter
C93	.01	600	M46BR103L6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C94	.01	600	M46BR103L6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C95	1000	500	M47X20A102M	1468-001	D6-102	1W5DI	GP2L-102	1FM-21	Ant. Isolation

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	7500Ω	2	M25B791	WK-7500	43S-7500		Contrast Control - Wire Wound
B	Shaft		Not Req.	Not Req.	Not Req.		Attach to R1A per instructions.
C	Switch		Not Req.	Not Req.	Not Req.		Attach to R1A per instructions.
R2	2500Ω	2	M25B710	WK-2500	43-2500	VK-132	Focus Control - Wire Wound
R3A	5KΩ	1	M25B712-L	QII-114	AG-19-5	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions.
R4A	2.5Meg	1/2	M25B711	QII-239	AG-84-5	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions.
R5	400Ω	2	M25B713	W-4000	43-400	VK-126	Horiz. Centering Control - Wire Wound
R6A	50KΩ	1/2	M25B874-B	Concentrikit B11-125 *	RTV-325	SBB-643	Brightness Control - Panel
B	1Meg	1/2		B11-137 *			Volume Control - Rear
C	Shaft End		Not Req.	E202 *	Not Req.		Attach to R6A per instructions.
R7A	50KΩ	1/2	M25B861	Concentrikit B11-125 *	RTV-336		Horiz. Hold Control - Panel
B	1Meg	1/2		B11-137 *			Vert. Hold Control - Rear
C	Shaft End		Not Req.	E202 *			Attach to R7A per instructions.

* Additional parts to be used in Concentrikit.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	150Ω 20%	1	M23X20X151M	BTS-150	AGC Network
R9	560Ω 20%	1	M23X20X561K	BTS-560	1st RF Grid
R10	1000Ω 20%	1	M23X20X102M	BTS-1000	1st RF Decoupling
R11	12000 20%	1	M23X20X123K	BTS-1200	1st RF Coil Shunt
R12	10KΩ 20%	1	M23X20X103K	BTS-10K	2nd RF Grid
R13	100Ω 20%	1	M23X20X101M	BTS-100	2nd RF Cathode
R14	1500Ω	1	M23X20X152K	BTS-1500	2nd RF Coil Shunt
R15	2200 20%	1	M23X20X221M	BTS-220	Decoupling
R16	56000Ω 20%	1	M23X20X562K	BTS-5600	Converter Grid
R17	100KΩ	1	M23X20X104M	BTS-100K	Converter Grid
R18	10KΩ	1	M23X20X103K		Converter Plate Decoupling
R19	10KΩ	1	M23X20X103K		Oscillator Grid
R20	100Ω	1	M23X20X101K	BTS-100	Decoupling
R21	150Ω	1	M23X20X151K	BTS-150	AGC Network
R22	5600Ω	1	M23X20X562K		1st Video IF Coil Shunt
R23	47Ω	1	M23X20X470K		1st Video IF Cathode
R24	15KΩ	1	M23X20X153M		1st Video IF Coil Shunt
R25	150Ω	1	M23X20X151K	BTS-150	AGC Network
R26	100Ω	1	M23X20X101K	BTS-100	Decoupling
R27	47Ω	1	M23X20X470K		2nd Video IF Cathode
R28	3300Ω	1	M23X20X332K	BTS-3300	2nd Video IF Coil Shunt
R29	150Ω	1	M23X20X151K	BTS-150	3rd Video IF Cathode
R30	100Ω	1	M23X20X101K	BTS-100	3rd Video IF Screen
R31	18KΩ	1	M23X20X183K	BTA-18K	3rd Video IF Plate Decoupling
R32	10KΩ	1	M23X20X103K	BTS-10K	Video Detector Diode Load
R33	150KΩ	1	M23X20X154M	BTS-150K	AGC Network See note 1.
R34	1Meg 20%	1	M23X20X105K	BTS-1Meg	AGC Network
R35	22KΩ	1	M23X20X223K	BTS-22K	Peaking Coil Shunt
R36	2200Ω	1	M23X20X222K	BTA-2200	1st Video Amplifier Plate
R37	10KΩ 20%	1	M23X30X103K	BTA-10K	Isolation See note 3.

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R38	1Meg 20%	1/2	M23X20X105K	BTS-1Meg	2nd Video Amplifier Grid
R39	4700Ω	2	M23X40X472K	BTH-4700	2nd Video Amplifier Plate
R40	470KΩ 20%	1/2	M23X20X474M	BTS-470K	Picture Tube Grid
R41	47KΩ	1	M23X30X473K	BTA-47K	Voltage Divider
R42	6800Ω 20%	1	M23X20X682K	BTS-6800	Voltage Divider
R43	33KΩ	1	M23X20X333K	BTS-33K	Voltage Divider
R44	10KΩ	1	M23X20X103K	BTS-10K	Picture Tube Cathode
R45	150Ω	1	M23X20X151K	BTS-150	Sound IF Cathode
R46	22KΩ	1	M23X20X223K	BTS-22K	Sound IF Decoupling
R47	10KΩ 5%	1/2	M23X20X103J	BTS-10K 5%	Ratio Detector Diode Load
R48	10KΩ 5%	1/2	M23X20X103K	BTS-10K 5%	Ratio Detector Diode Load
R49	33KΩ	1	M23X20X333K	BTS-33K	De-emphasis
R50	470KΩ 20%	1/2	M23X20X474M	BTS-470K	Tone Compensation
R51	4.7Meg 20%	1/2	M23X20X475M	BTS-4.7Meg	AF Amplifier Grid
R52	470KΩ 20%	1/2	M23X20X474M	BTS-470K	AF Amplifier Plate
R53	4.7Meg 20%	1/2	M23X20X475J	BTS-4 7Meg	AF Output Grid
R54	330KΩ 5%	1/2	M23X20X334J	BTS-330K 5%	AF Output Grid
R55	8200Ω	10	M24BG822E	1.3/4A 8500	Voltage Divider Wire Wound
R56	27KΩ	1/2	M23X20X273K	BTS-27K	1st Sync Separator Plate
R57	270KΩ	1/2	M23X20X274K	BTS-270K	2nd Sync. Separator Cathode
R58	820KΩ	1/2	M23X20X824M	BTS-820K	2nd Sync Separator Plate
R59	47KΩ	1/2	M23X30X473K	BTA-47K	2nd Sync. Separator Plate
R60	4700Ω	1/2	M23X20X472K	BTS-4700	Sync Amplifier Cathode
R61	2200Ω	1/2	M23X20X222K	BTS-2200	Sync. Amplifier Plate
R62	2200Ω	1/2	M23X20X222K	BTS-2200	Sync. Amplifier Plate
R63	22KΩ	1/2	M23X20X223K	BTS-22K	Integrator Network
R64	8200Ω	1/2	M23X20X822K	BTS-8200	Integrator Network
R65	8200Ω	1/2	M23X20X822K	BTS-8200	Integrator Network
R66	1Meg	1/2	M23X20X105K	BTS-1Meg	Vertical Oscillator Grid
R67	1Meg	1/2	M23X30BP105K	BTA-1Meg	Vertical Oscillator Plate
R68	470KΩ	1/2	M23X30X474K	BTA-470K	Vertical Peaking
R69	390Ω	1	M23X20X391K	BTA-390	Vertical Output Cathode
R70	2.2Meg 20%	1/2	M23X20X225M	BTS-2.2Meg	Vertical Output Grid
R71	470KΩ	1/2	M23X30X474K	BTA-470K	Integrator Network
R72	82KΩ	1/2	M23X20X823K	BTS-82K	Voltage Divider
R73	120KΩ 20%	1/2	M23X20X124M	BTS-120K	Voltage Divider See note 1.
R74	2.7Meg	1/2	M23X30BP275K	BTA-2.7Meg	Horizontal AFC Grid
R75	820KΩ	1/2	M23X20X824M	BTS-820K	Horizontal AFC Cathode See note 3.
R76	150KΩ 20%	1/2	M23X20X154M	BTS-150K	Horizontal AFC CAthode See note 4.
R77	150KΩ	1/2	M23X30BP154K	BTA-150K	Horizontal AFC Filter
R78	8200Ω	1/2	M23X20X822K	BTS-8200	Horizontal Oscillator Grid See note 5.
R79	120KΩ 5%	1/2	M23X30BP124J	BTA-120K 5%	Horizontal Oscillator Coil Shunt
R80	8200Ω	1/2	M23X20X822K	BTS-8200	Horizontal Oscillator Coil Shunt
R81	22KΩ	1/2	M23X20X223K	BTS-22K	Horizontal Oscillator Plate
R82	120KΩ 5%	1/2	M23X30BP124J	BTA-120K 5%	Horizontal AFC Feedback
R83	150KΩ 20%	1/2	M23X20X154M	BTS-150K	Horizontal AFC Feedback
R84	560KΩ 20%	1/2	M23X20X564K	BTS-560K	Parasitic Suppressor
R85	47Ω	1/2	M23X20X470K		Horizontal Output Grid
R86	470KΩ 20%	1/2	M23X20X474M	BTS-470K	Horizontal Output Cathode
R87	100Ω	2	M23X40X101K		Horizontal Output Screen See note 6.
R88	39KΩ	2	M23X40X393K	BTB-39K	Horizontal Output Screen
R89	39KΩ	2	M23X40X393K	BTB-39K	Parasitic Suppressor
R90	33Ω	1	M23X30X330K		Decoupling
R91	10KΩ	1	M23X30X103K	BTA-10K	HV Rectifier Filament Wire Wound
R92	3.3Ω	1/2	M23X20X033M		HV Filter
R93	1Meg	1/2	M23X30X105M		Filter Wire Wound
R94	200Ω	20	M24BH201E	2D-200	Bleeder Wire Wound
R95	30KΩ	10	M24BG253E	1.3/4A-25K	Horizontal Peaking See note 7.
R96	22KΩ 20%	1/2	M23X20X223K	BTS-22K	

Note 1. Chassis 549.100-6 uses a 330KΩ resistor in this application.
Note 2. Chassis 549.100-8 Uses a 4700Ω resistor in this application.
Note 3. Chassis 549.100-8 uses a 47KΩ resistor in this application.
Note 4. Chassis 549.100-8 uses a 180KΩ resistor in this application.
Note 5. Chassis 549.100-6 uses a 82KΩ resistor in this application.
Note 6. Chassis 549.100-6 uses a 15KΩ 10W resistor in this application.
Note 7. Used in chassis 549.100-6 only.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	890VCT	5VAC	6.3VAC	M52C199		P-3169	
	① 1.8A	210ADC	② 3 A	③8A				
				Sec. 4				
				6.3VAC				
				④ 1.2A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	185Ω	1000Ω	M55B115	A-8111	A-3000	TDO-1 ①	Vertical Osc. Trans.
	320Ω	4.7Ω	M55C154	A-8130 ①	HVO-7 ①		Horiz. Output Trans.
	Tapped	Tapped	M55C155 ②				
	② 40Ω	② .5Ω & 3.7Ω Sec. 2 0Ω	M55C144 ③				
T4	1120Ω Tapped ⑤ 130		M55B128	A-8123	A-3037		Vert. Output Trans.
T5A	17Ω		M55C195	DY-9	MDF-70		Horiz. Deflection Coils
B	63Ω		M55 C202 ②				Vert. Deflection Coils
T6	1000Ω		M55B159 M55B1280 ②				Focus Coil

① Drill new mounting holes.
② Used in chassis 549.100-6
③ Used in chassis 549.100 - 8 & 549.100-9

SILVERTONE MODELS 102A (Ch. 549.100-3, -7), 168-16 (Ch. 549.100-3), 175-16, A (Ch. 549.100-5, -8, -9), 176-19 (Ch. 549.100-6)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	6.5KΩ	3.5Ω	365Ω	.5Ω	M55C134	A-3878	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.5Ω	M85C101 M85A102 ③ M85C106 ②	ST-105 Mod. P5-X	5A1	③ Used in chassis 549.100-8 & 549.100-9 ② Used in chassis 549.100-6
	CONE DIA.	V. C. DIA.				
SP1B	4½ "	9/16 "				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MERIT PART No.	
L1A	Ant. Coil	0Ω	0Ω			Low Band
B	Ant. Coil	0Ω	0Ω			High Band
L2	Fil. Choke	0Ω				Not used in all models
L3	1st RF Coil	0Ω				Low Band
L4	1st RF Coil	0Ω				High Band
L5	Fil. Choke	0Ω				
L6	2nd RF	0Ω				Low Band
L7	2nd RF	0Ω				High Band
L8	Fil Choke	0Ω				
L9	Osc. Coil	0Ω				Low Band
L10	Osc. Coil	0Ω				High Band
L11	RF Choke	0Ω				
L12	1st Video IF	.1Ω	.1Ω	M50B458		
L13	21.75MC Trap	.1Ω		M51B1231	TV-150	
L14	2nd Video IF	.2Ω	.2Ω	M50A431		
L15	3rd Video IF	.2Ω	.2Ω	M50A431		
L16	4th Video IF	.2Ω	.2Ω	M50A431		
L17	Peaking Coil	7.5Ω		M51B1154	TV-181 ①	Wound on 1Meg resistor
L18	Peaking Coil	7.7Ω		M51B1155		Wound on 1Meg resistor
L19	Peaking Coil	7.5Ω		M51B1154	TV-181 ①	Wound on 1Meg resistor
L20	Peaking Coil	15.5Ω			TV-188 ①	Wound on 1Meg resistor
L21	Peaking Coil	7.5Ω		M51B1154	TV-181 ①	Wound on 1Meg resistor
L22	Sound IF	1Ω	.6Ω	M50A432		
L23	Ratio Det. Trans.	4.2Ω	.8Ω	M50B406	TV-110	Tap ④ .6Ω
L24	Horiz. Osc.	72Ω	42Ω	M51B1153	TV-162	
L25	Width Coil	.7Ω		M51B1230	MWC-2	
L26	Horiz. Lin.	20Ω		M51B1232	MWC-1	
L27	Line Choke	.2Ω		M53B009		
L28	Line Choke	.2Ω		M53B009		

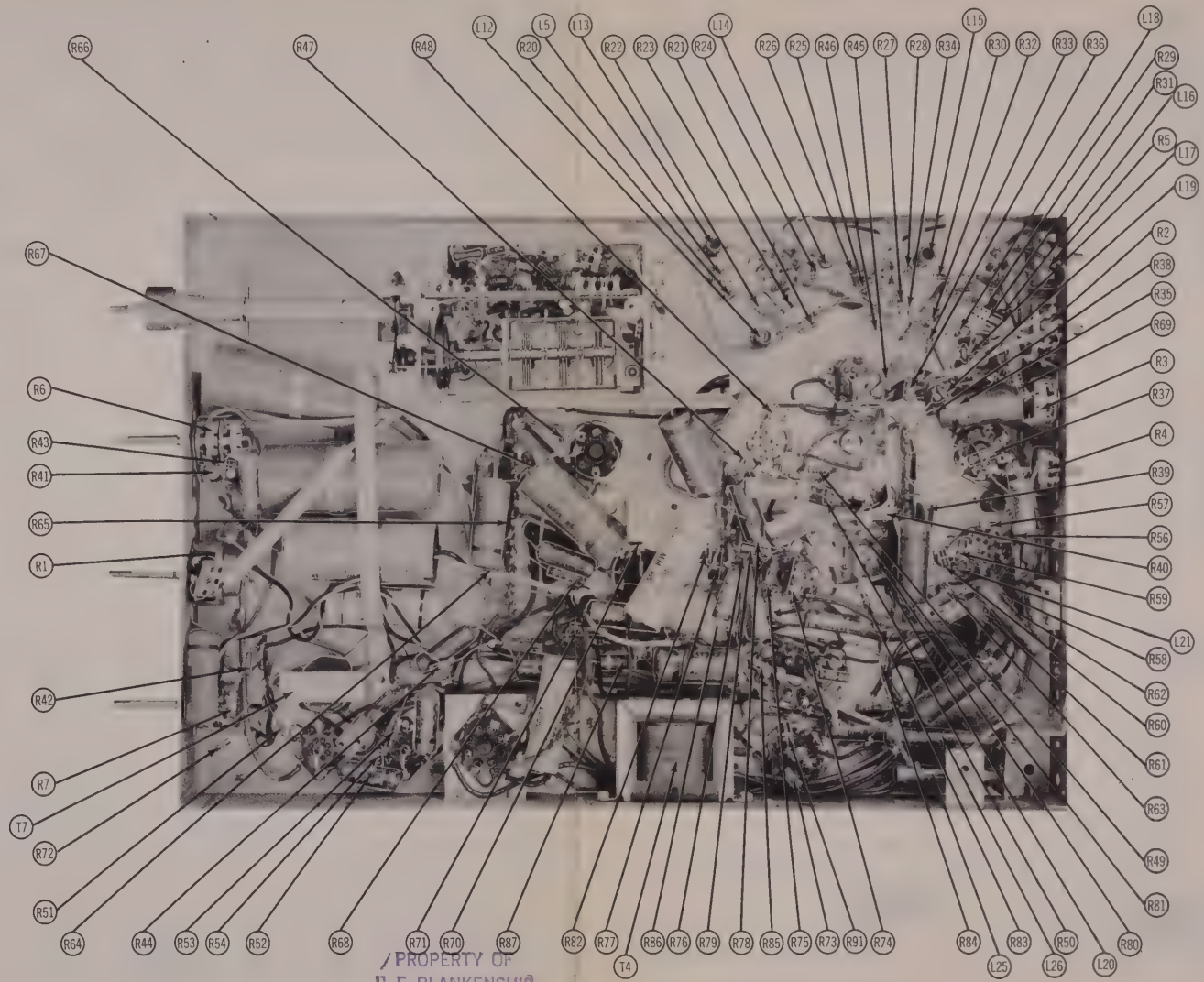
① Parallel with 1Meg Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			SILVERTONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail SloBlo	5A-125V	M39A346		315005		

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	RF Tuner	M1C945	Complete
M3	Switch	M60A381	TV - Phono
M4	Ion Trap	M21A101	
B3	Trimmer	M44A361	Horiz. Drive
	Knob	M15B224	Tuner Indicator
	Knob	M15A257	Band Selector
	Knob	M15B223	Fine Tuning
	Knob	M15A259	Horiz. Hold & Brightness
	Knob	M15B195	Volume & Vert. Hold
	Knob	M15A258	Off/On & Contrast



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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PHOTOFACT* Folder

TRUETONE MODELS 2D1091, 2D2043A, 2D2047B

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MODEL 2D2043A

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3924

TRUETONE MODELS
2D1091, 2D2043A, 2D2047B

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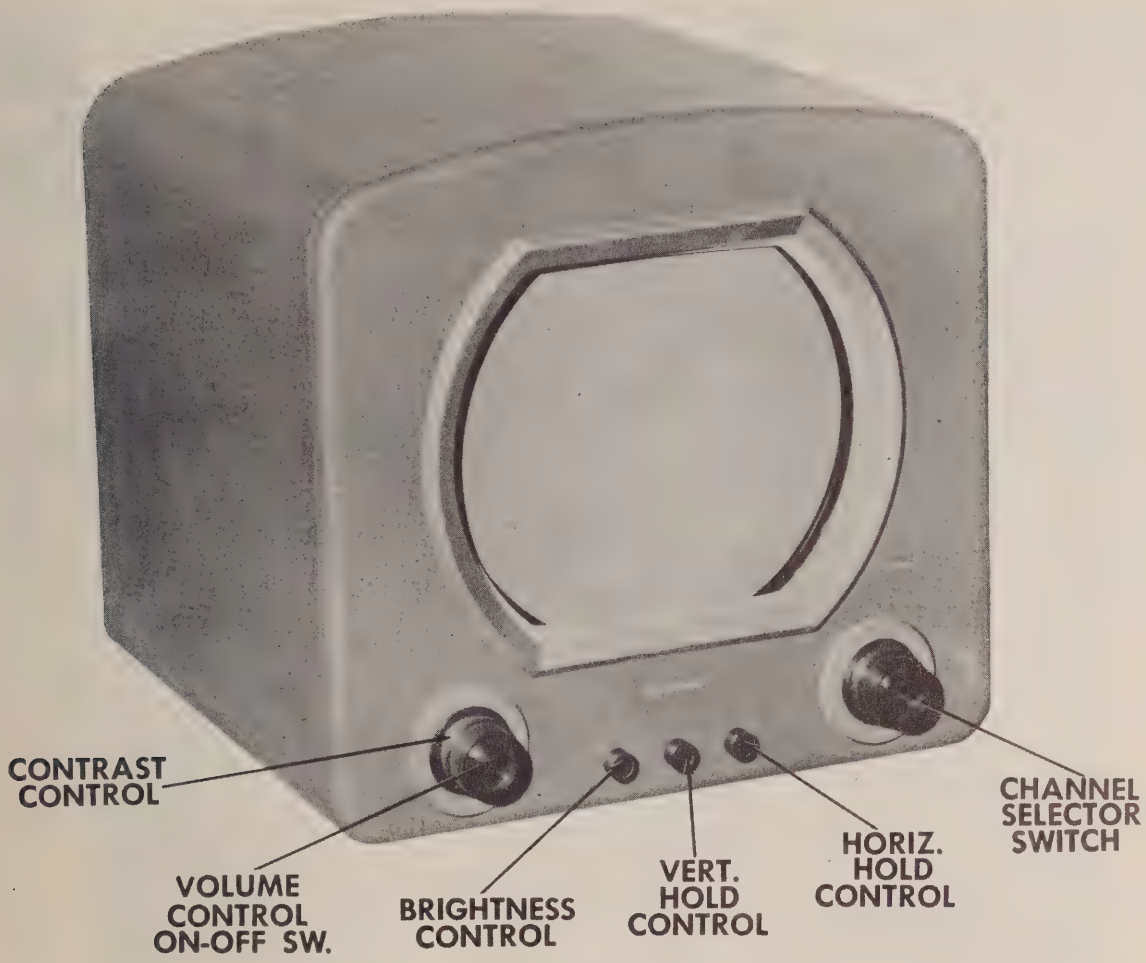
DATE 3-52 SET 161 FOLDER 10

TRUETONE MODELS 2D1091, 2D2043A, 2D2047B

TRUETONE MODELS
2D1091, 2D2043A, 2D2047B



Truetone Model 2D2043A

TRADE NAME	Truetone Models 2D1091, 2D2043A, 2D2047B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty One

POWER SUPPLY 110-115 Volts AC-60 Cycle RATING 1.8 Amp. @ 115 Volts AC
TUNING RANGE—Channels 2 Thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 12, 13, 15
Photographs
Cabinet - Rear View 10
Capacitor and Alignment Identification 4, 9
Photographs (cont.)
Chassis - Top View 3
RF Tuner 7
Resistor and Inductor Identification 11, 14
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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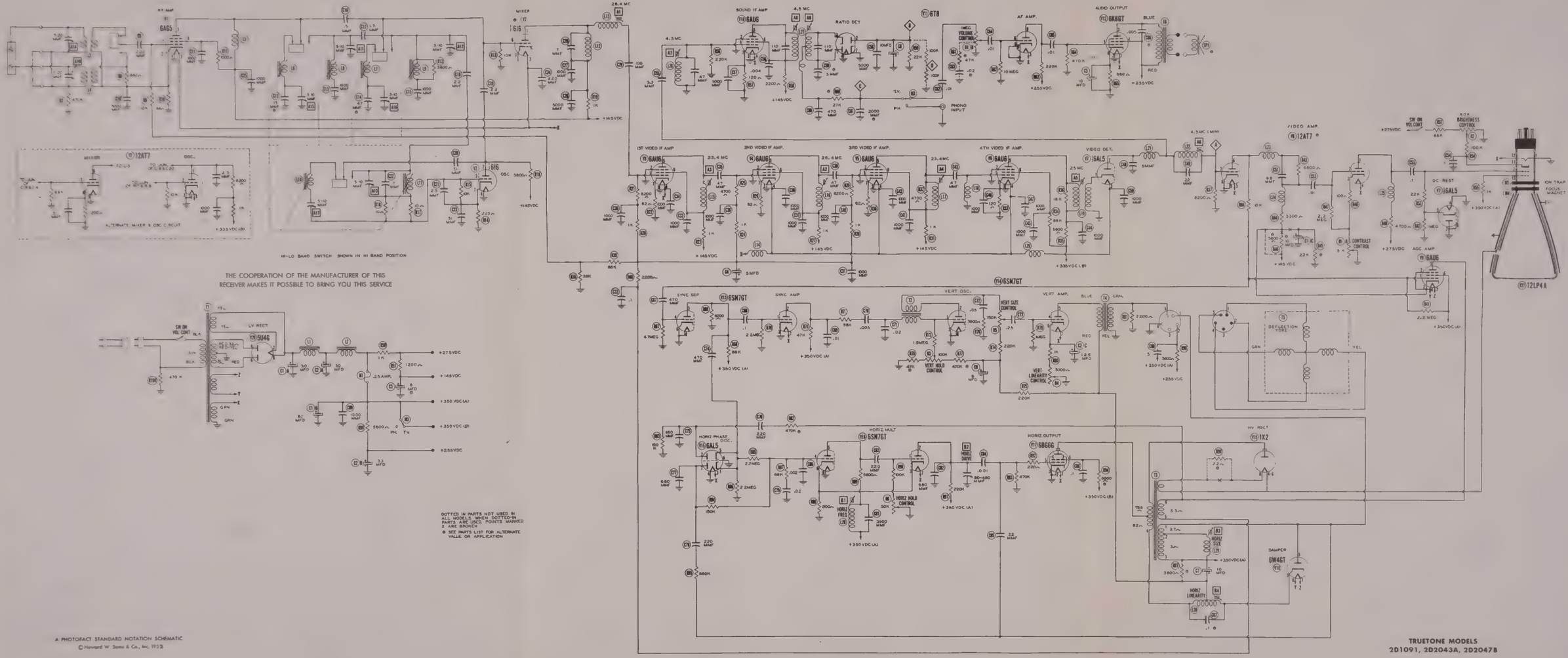
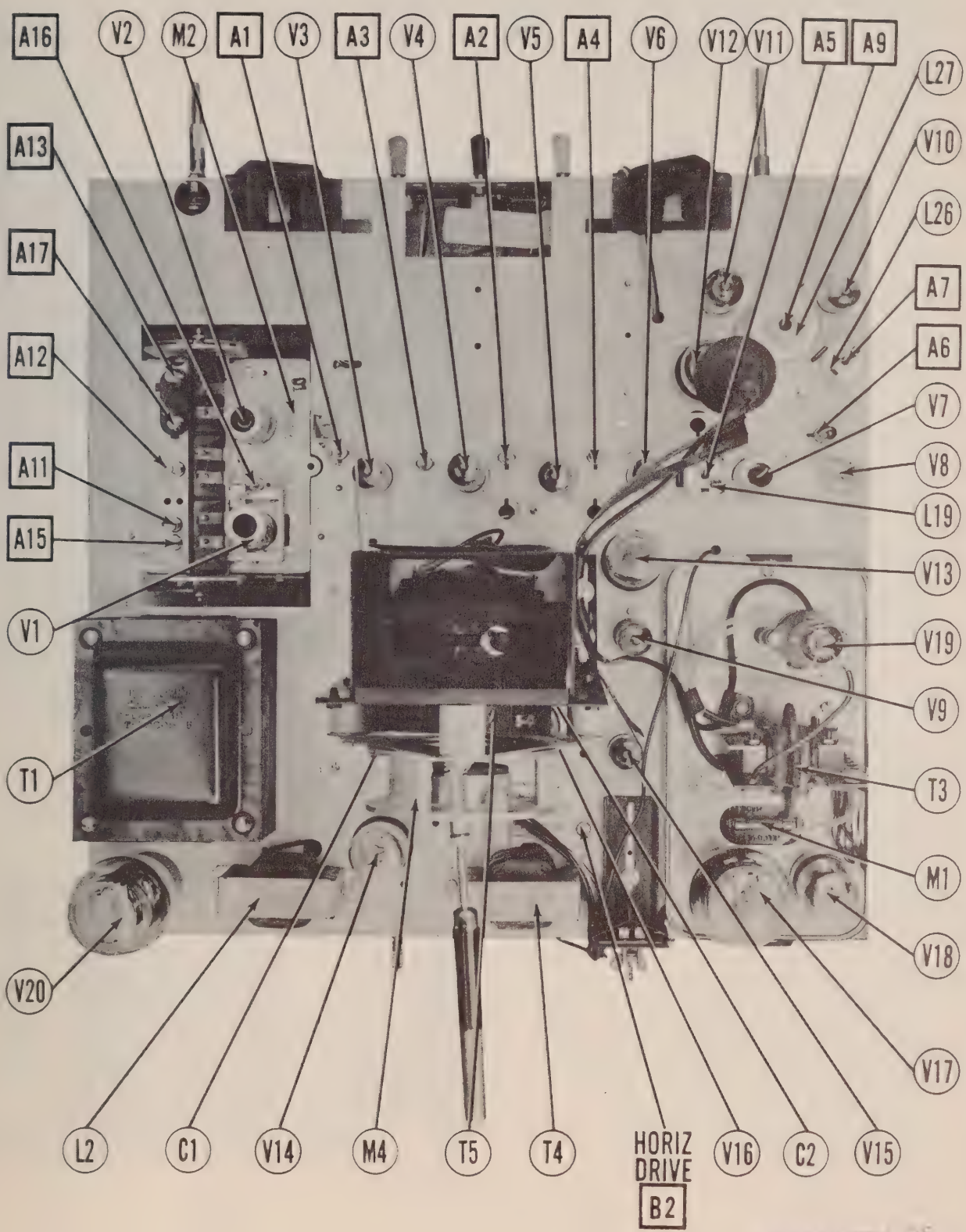


TRUETONE MODELS
2D1091, 2D2043A, 2D2047B



CHASSIS TOP VIEW

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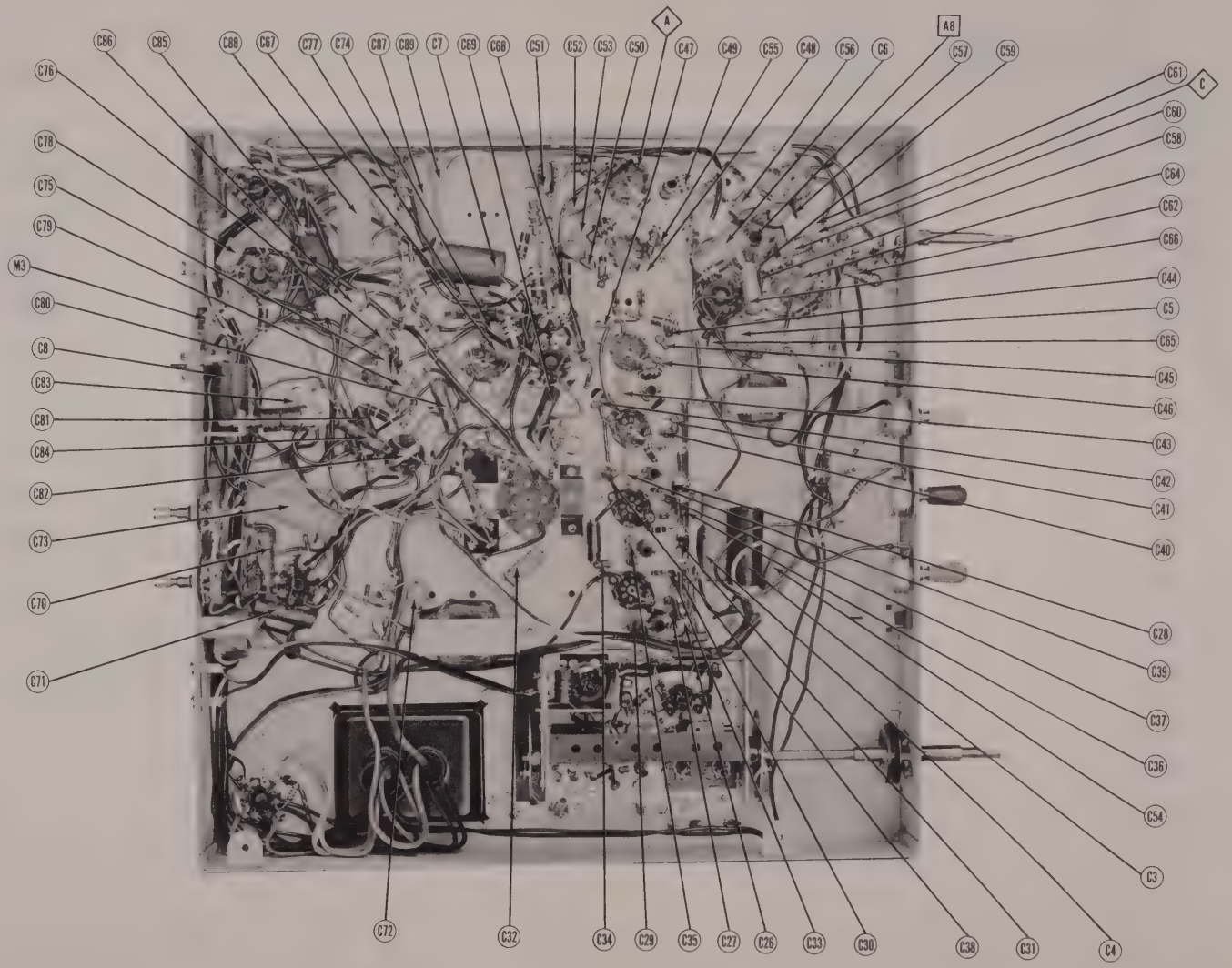

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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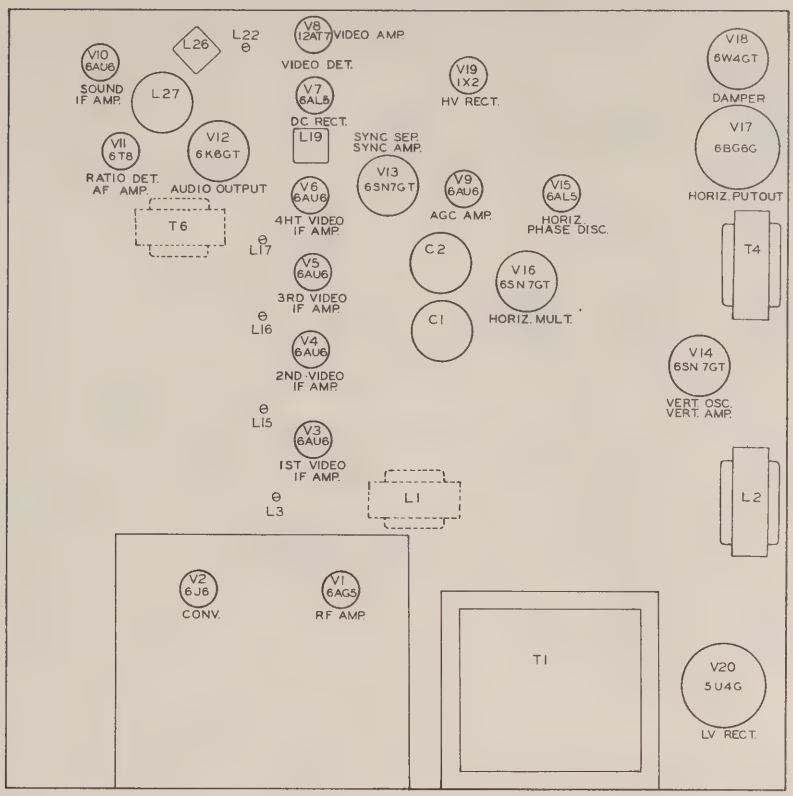
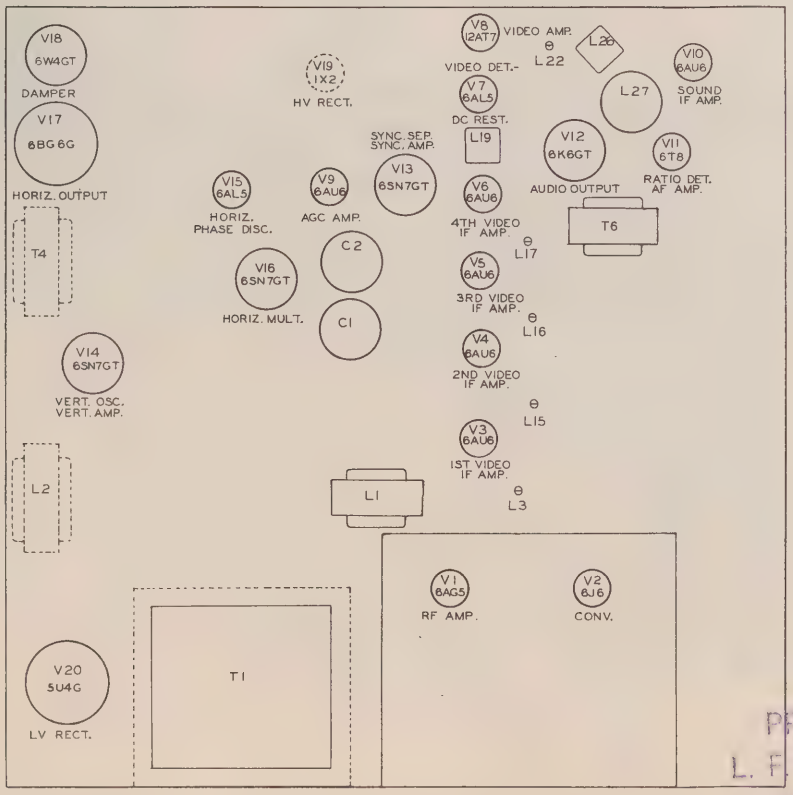


TOP VIEW



BOTTOM VIEW

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TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Note: In later productions the 6J6, converter, has been replaced with a 12AT7. In that event use a 12AT7 with pin 1 removed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	26.4MC	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal gen. to maintain 1 volt reading.
2.	"	"	23.4MC	"	"	A3, A4	"
3.	"	"	25MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	24MC (10MC SWP)	23MC 26.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD.	High side to pin 1 (cathode of 6AL5, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to B-. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A9	Reconnect capacitor C6. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original tube in its socket.
Pre-set the trimmer screws as shown in figure 5.
With the switch is low band position, turn the tuner core carriage to the extreme top of its travel.
Check to see that the cores project 1.6ins. out of the coils, then turn the low band oscillator core on additional four turns out of the coil, (counter-clockwise).

LOW BAND ALIGNMENT

Move carriage bar down 7/64 inch, from extreme top, by turning tuning control clockwise. This is the proper position for channel 6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6 (see note above)	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum response with symmetrical peaks.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as shown in fig. 4.
10.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"		Turn the tuning control until the video marker appears at 50% on the response curve for each of the low band channels, and check for proper response curve. If necessary retouch A11 and A12 for compromise adjustment which will give best response over the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

HIGH BAND ALIGNMENT

Move the carriage bar down 7/64 inch, from extreme top, by turning tuning control counter-clockwise. This is the proper position for channel 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13 (see note above)	Vert. Amp. to Point (A) Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response with symmetrical peaks.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as shown in fig. 4.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Turn tuning control to place video marker at 50% for each of the high band channels, and check for proper response curve. If necessary retouch A15 and A16 for compromise adjustment which will give the best response over the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

ALIGNMENT INSTRUCTIONS (CONT.)

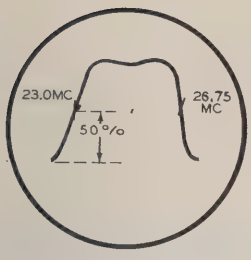


FIG. 1

FIG. 2

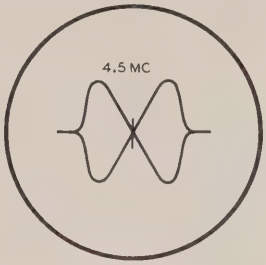


FIG. 3

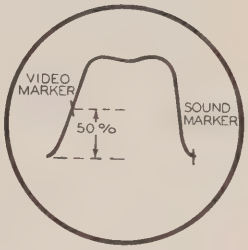


FIG. 4

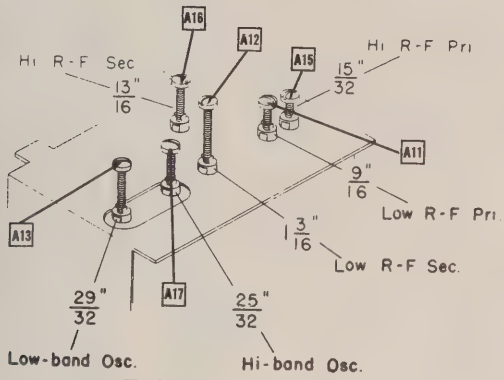
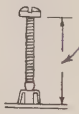
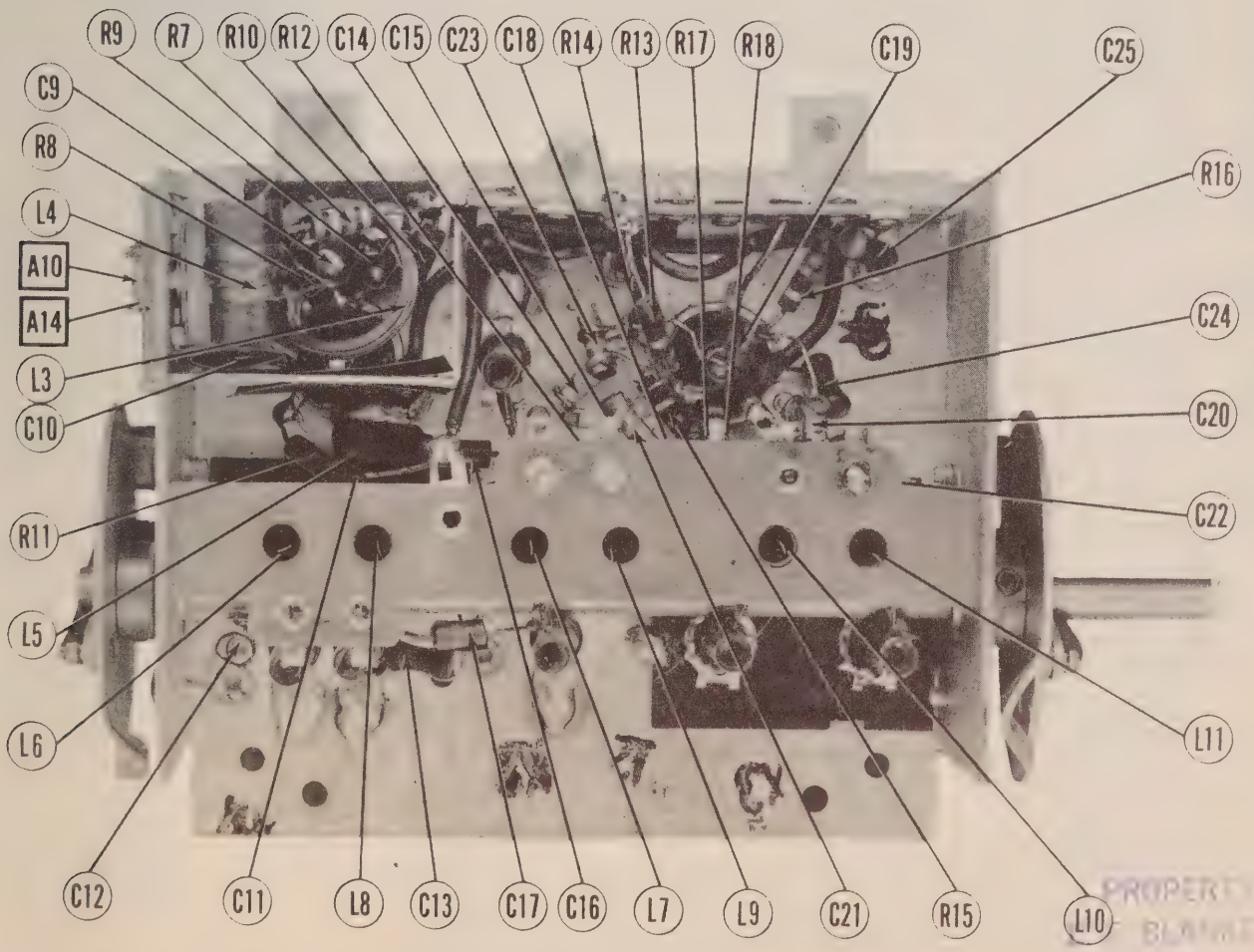


FIG. 5

ALIGNING TRIMMERS



The dimensions shown are approx from the shoulder of screw head to mounting base



RF TUNER - BOTTOM VIEW

PROPERTY OF BLAUPUNKT

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.1VDC	.6VDC	6.3VAC	0V	145VDC	145VDC	.6VDC		
V 2	6J6	160VDC	100VDC	6.3VAC	0V	§-.8VDC	0V	3VDC		
V 3	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	138VDC	138VDC	.9VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	290VDC	140VDC	1.2VDC		
V 7	6AL5	0V	0V	6.3VAC	0V	.9VDC	0V	-2.2VDC		
V 8	12AT7	200VDC	0V	39VDC 1VDC	6.3VAC	6.3VAC	83VDC	-.3VDC	0V	0V
V 9	6AU6	85VDC	100VDC	■100VDC	■100VDC	0V	330VDC	100VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	125VDC	125VDC	1VDC		
V 11	6T8	-.2VDC	-.3VDC	-.2VDC	0V	6.3VAC	0V	0V	-.3VDC	83VDC
V 12	6K6GT	0V	0V	250VDC	255VDC	0V	0V	6.3VAC	18VDC	
V 13	6SN7GT	-.2VDC	85VDC	0V	-1VDC	35VDC	0V	6.3VAC	0V	
V 14	6SN7GT	-7.3VDC	112VDC	0V	0V	430VDC	14VDC 22VDC	6.3VAC	0V	
V 15	6AL5	2.8VDC	-.2VDC	6.3VAC	0V	2.8VDC	0V	-.2VDC		
V 16	6SN7GT	-1.6VDC	125VDC	11VDC	-.2VDC	290VDC	11VDC	6.3VAC	0V	
V 17	6BG6G	-.2VDC	0V	0V	310VDC	-14VDC	-14VDC	6.3VAC	250VDC	Top Cap *
V 18	6W4GT	330VDC	0V	445VDC	0V	330VDC	0V	■100VDC	■100VDC	
V 19	1X2	*	DO NOT MEASURE							
V 20	5U4G	0V	350VDC	0V	340VAC	0V	340VAC	330VDC	350VDC	
V 21	12LP4A	0V	6VDC	PIN 10 340VDC	PIN 11 95VDC	PIN 12 6.3VAC				

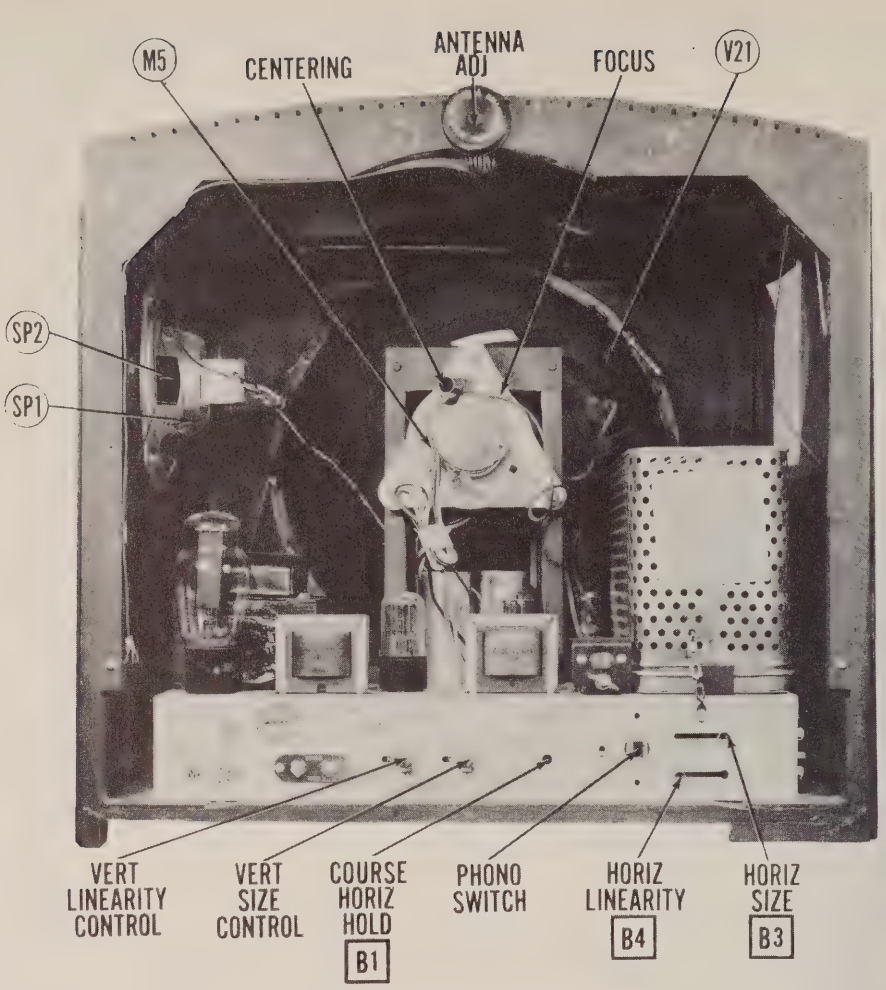
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
■ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	45KΩ	68Ω	.1Ω	0Ω	†2.4KΩ	†3.4KΩ	68Ω		
V 2	6J6	†3.2KΩ	†9KΩ	.1Ω	0Ω	10KΩ	10KΩ	220Ω		
V 3	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 4	6AU6	75KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 5	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 6	6AU6	2Ω	0Ω	0Ω	.1Ω	†5.8KΩ	†68KΩ	120Ω		
V 7	6AL5	1Ω	0Ω	.1Ω	0Ω	1Meg	0Ω	8.2KΩ		
V 8	12AT7	†5.6KΩ	2.2Meg	4.5KΩ	.1Ω	.1Ω	†18KΩ	8.2KΩ	0Ω	0Ω
V 9	6AU6	†30KΩ	†7.5KΩ	¶.1Ω	¶0Ω	70KΩ	†80Ω	†7.5KΩ		
V 10	6AU6	1Ω	0Ω	0Ω	.1Ω	†4.5KΩ	†4.5KΩ	120Ω		
V 11	6T8	Inf.	22KΩ	Inf.	0Ω	.1Ω	0Ω	0Ω	10Meg	†220KΩ
V 12	6K6GT	Inf.	0Ω	†3.2KΩ	†3.2KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 13	6SN7GT	2.2Meg	†47KΩ	0Ω	4.7Meg	†20KΩ	0Ω	.1Ω	0Ω	
V 14	6SN7GT	1.5Meg	▲1Meg	0Ω	1Meg	▲100Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 15	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 16	6SN7GT	100KΩ	†220KΩ	1.5KΩ	4.5Meg	†5.6KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BG6G	4.5Meg	0Ω	0Ω	680KΩ	470KΩ	470KΩ	.1Ω	†6.8KΩ	Top Cap ▲88Ω
V 18	6W4GT	†80Ω	Inf.	200KΩ	Inf.	†80Ω	70KΩ	¶.1Ω	¶0Ω	
V 19	1X2	ALL PINS ARE INF. RESISTANCE								Top Cap 850Ω
V 20	5U4G	Inf.	20KΩ	500KΩ	32Ω	500KΩ	31Ω	20KΩ	20KΩ	
V 21	12LP4A	0Ω	1Meg	PIN 10 1.2KΩ	PIN 11 150KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V20
▲ MEASURED FROM PIN 3 OF V18
¶ MEASURED FROM JUNCTION OF R44 AND R45.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV staion, preferably a test pattern.

Turn the horizontal hold, "fine", (front panel), to the mid-position of its range.

Adjust the horizontal hold control, "coarse" slug, (B1), (rear of chassis), to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until a fold over, (bright vertical line) appears in the picture, Then turn the trimmer clockwise until the fold over disappears and then one half turn additional.

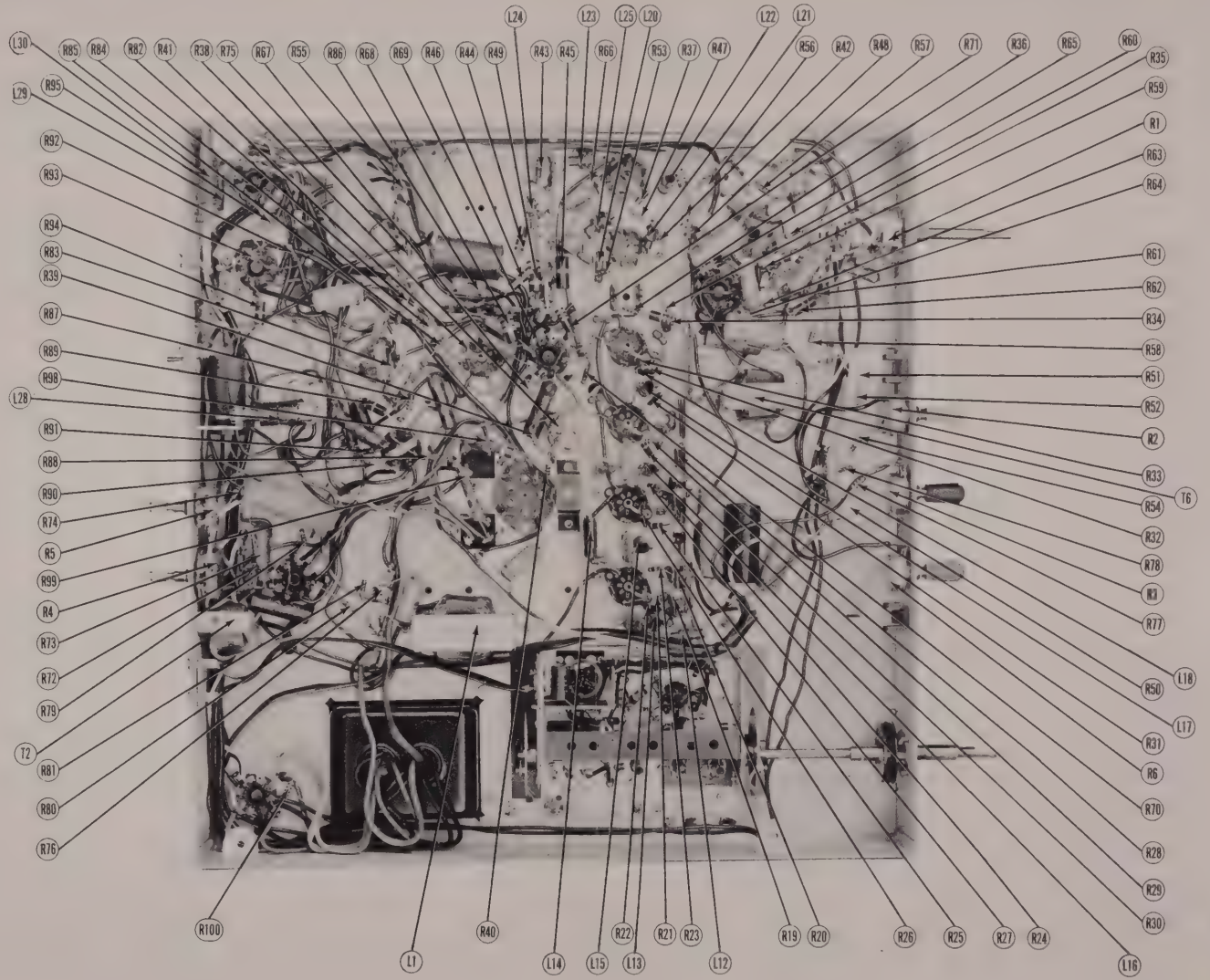
Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Slight readjustment of B2 may be necessary for optimum linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs and channel pointer.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna,
4. Disconnect speaker.
5. Remove five metal screws from chassis. Remove chassis.
6. Remove two 5/10" hex nuts from speaker. Remove speaker.

NOTE: - FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2A	Converter	6J6	6J6	7BF	
B	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-				
	DC Restorer	6AL5	6AL5	6BT	
V8A	Video Amplifier	12AT7	12AT7	9A	
B	Video Amplifier	12AU7	12AU7	9A	
V9	AGC Amplifier	6AU6	6AU6	7BK	
V10	Sound IF Amplifier	6AU6	6AU6	7BK	
V11	Ratio Detector-				
	AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Sync Separator- Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V14	Vert Amplifier - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Phase Discr.	6AL5	6AL5	6BT	
V16	Horiz Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	5BT	5BT	
V18	Damper	6W4GG	6W4GT	4CG	
V19	HV Rectifier	1X2	1X2	7CB	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	SYLVANIA PART No.	THOMAS PART No	RTMA BASE TYPE	NOTES
V 21	12LP4A	12LP4A	12LP4A ①		① Use single magnet ion trap.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	A-8C-17845	AFH3666‡		UPT36145		TVL-3790	= Filter
B	60	450							= Filter
C	10	450							= Decoupling
C2A	30	450	A-8C-18487	AF644‡		UPT409		TVL-3741	= Filter
B	30	450		PRS25/100				TVA-1207	= Audio Output Dec.
C	125	25							‡ Vert. Amp. Cathode
C3	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C4	5	50	A-8C-11751	PRS150/4		BR550		TVA-1303	AGC Filter
C5	10	50	A-8C-17183	PRS50/10		BR1050		TVA-1304	Audio Output cathode
C6	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C7	10	150	A-8C-11495	PRS150/12		BR1015		TVA-1408	Decoupling
C8	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C9	220		C-8G-16045	5I220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	5000		A-8G-13982	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		C-8G-13301	5I1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C12	15				TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer †
C13	1000		C-8G-13201	5I1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C14	4.7				TCZ-4.7		NP0K-4R7		Fixed Trimmer #
C15	1000		C-8G-13201	5I1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C16	.5		A-8G-12495-7		TCZ-.5		NP0K-0R5		RF Coupling
C17	1.5			5II.5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C18	2.2		A-8G-13495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C19	2.2		A-8G-12495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C20	51		A-8G-11891		TCN-51		N750K-510		Osc. Feedback
C21	3.5		C-8G-15737						Osc. Grid Cap.
C22	7		C-8G-15234	5I6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C23	51		A-8G-11891	5I51	TCN-51		GP1K-510	5GA-Q5	Mixer Cathode
C24	220		C-8G-16045	5I220	D6-221		GP2K-220	5GA-T22	Conv. Fil.
C25	1000		C-8G-13201	5I1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C26	7		C-8G-15234	5I6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C27	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	Conv. Plate Dec.
C28	5000		A-8G-13982	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C29	100	500	C-8F3-8	1468-00005	D6-101	1W5T1	GP1K-101	1FM-31	IF Coupling
C30	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C31	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C32	.1	200	C-8G-10770	2S88-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C33	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Dec.
C34	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C35	47	500	C-8F3-100	1468-00005	D6-470	5RSQ5	GP1K-470	MS-45	IF Coupling
C36	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C37	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C38	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C39	47	500	C-8F3-109	1468-00005	D6-470	5RSQ5	GP1K-470	MS-45	IF Coupling
C40	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C41	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Dec.
C42	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C43	47	500	C-8F3-109	1468-00005	D6-470	5RSQ5	GP1K-470	MS-45	IF Coupling
C44	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Plate
C45	1000		C8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Screen
C46	1000		C8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Cathode
C47	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Fil.
C48	5		C-8G-13186	5I5NP0			NP0K-050		Video Diode Filter
C49	22				TCZ-22		NP0K-220	5TCC-Q22	Fixed Trimmer
C50	1000		C-8G-13201	5I1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C51	68	500	C-8F3-111	1469-00007	D6-680	5RSQ7	GP1K-680	MS-47	Video Coupling
C52	.01	400	C-8D-10781	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C53	.1	400	C-8D-10780	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C54	.1	400	C-8D-10780	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C55	3.3		A-8G-12496-5	5I3.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C56	.004	400	C-8D-17858	P488-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Sound IF Decoupling
C57	5000		A-8G-13982	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C58	5000		A-8G-13982	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C59	5			S15			5W5V5	GP1K-050	Balancing Cap. †
C60	470	500	C-8F3-131	1469-0005	D6-471	5RST5	GP2K-471	MS-55	Diode Load Cap.
C61	2000			S12000	D6-202	1W5D8	GP2-333-202	5HK-D2	De-emphasis ††
C62	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C63	.02	200	C-8D-17288	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp. *
C64	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C65	.01	400	C-8D-10781	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.005	600	C-8D-10955	P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate††
C67	470	500	C-8F3-121	1469-0006	D6-471	5RST5	GP2K-471	MS-55	Sync. Coupling
C68	.1	200	C-8D-10770	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	.01	400	C-8D-10781	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sync. Sep. Plate
C70	.005	600	C-8D-10955	P488-005	D6-503	PTE6D5	GP2-333-503	6TM-D5	Vert. Sync. Coupling
C71	.02	400	C-8D-10774	P488-02	DF-203	PTE4S2		4TM-S2	Integrator Net.
C72	.05	400	C-8D-14681	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharge
C73	.25	600	C-8D-13459	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C74	470	500	C-8F3-121	1469-0005	D6-471	5RST5	GP2K-471	MS-55	Horiz. Sync. Coupling
C75	680	500	C-8F3-123	1479-0007	D6-681	2RST7	GP2K-681	MS-37	Voltage Divider
C76	220	500	C-8F3-117	1469-00025	D6-221	5RST25	GP2K-221	MS-32	Horiz. Feedback
C77	680	500	C-8F3-123	1479-0007	D6-681	2RST7	GP2K-681	MS-37	Voltage Divider
C78	220	500	C-8F3-117	1469-00025	D6-221	5RST25	GP2K-221	MS-32	Horiz. Feedback
C79	.02	600	C-8D-17286	P688-02	DF-203	PTE6S2		6TM-S2	AFC Filter
C80	.002	800	C-8D-10778	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	AFC Filter
C81	3900	500	C-8F11-132	1464-004	D6-402	1DR5D4	GP2-333-402	MS-34	Fixed Trimmer
C82	220	500	C-8F3-117	1469-00025	D6-221	5RST25	GP2K-221	MS-32	Horiz. MV Feedback
C83	680	500	C-8F3-123	1479-0007	D6-681	2RST7	GP2K-681	MS-37	Horiz. Discharge
C84	.001	400	C-8D-12020	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C85	32		C-8G-11893		TCN-32		N750K-320	5TCU-Q32	Horiz. Feedback
C86	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Output Screen
C87	.1	200	C-8D-10770	P288-1	DF-104	PTE4P1		2TM-P1	Fixed Trimmer ##
C88	.5	300	C-8D-11270	P388-5		GT3P5		3TM-P5	Horiz. Sweep Coupling
C90	1000	500	C-8F5-125	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	RF Bypass

† Some models use 4 7MMF Mfgrs. Part # A-8G 12495-6 in this application.
† Some models use 12MMF Mfgrs. Part # C-8G-17305 in this application.
# Some models use 4MMF Mfgrs. Part # C-8G-11893 in this application.
†† Some models use 470MMF Mfgrs. Part # C-8F3-12 in this application.
‡† Some models use .01MF Mfgrs. Part # C-8D-10781 in this application.
Some models use .05MF Mfgrs. Part # C-8D-10770 in this application.
* Not used in all models.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18441		RTV-218	SBBT-617-8	Contrast Control - Front
B	1Meg	½					Volume Control and SW - Tapped ②
							100KΩ - Rear
R2A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	A-10B-17275	Q11-128	AG-49-S	AN-60	Vert. Hold Control
B	Shaft		Not req.	Not req. -	KS8-3	AK-4	Attach to R3A per instructions
R4A	5000	½	A-10B-17766	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FK8-1/4	AK-1	Attach to R4A per instructions
R5A	750KΩ	½	A-10B-18240		AG-61-S	AN-89	Vert. Size Control
B	Shaft		Not req.		FK8-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	470KΩ 5%	½		BTS-470K-5%	Antenna Isolation
R8	68Ω	½	C-9B1-80	BTS-68	Antenna Coil Shunt
R9	10KΩ	½	C-9B1-74	BTS-10K	RF Amp. Grid
R10	68Ω	½	C-9B1-48		RF Amp. Cathode
R11	1000Ω 20%	½	C-9B1-13	BTS-1000	RF Amp. Screen
R12	5600Ω	½	C-9B1-71	BTS-5600	RF Coil Shunt
R13	10KΩ	½	C-9B1-74	BTS-10K	Mixer Grid
R14	220Ω	½	C-9B1-54	BTS-220	Conv. Cathode
R15	10KΩ	½	C-9B1-74	BTS-10K	Osc. Grid
R16	5600Ω	½	C-9B1-71	BTS-5600	Osc. Plate
R17	10Ω	½	C-9B1-36		Parasitic Suppressor
R18	10Ω	½	C-9B1-36		Parasitic Suppressor
R19	1000Ω 20%	½	C-9B1-13	BTS-1000	Decoupling
R20	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R21	8200Ω	½	C-9B1-73	BTS-8200	1st. Video IF Amp. Grid
R22	82Ω	½	C-9B1-49	BTS-82	1st. Video IF Amp. Cathode
R23	1000Ω 20%	½	C-9B1-13	BTS-1000	1st. Video IF Amp. Decoupling
R24	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R25	4700Ω	½	C-9B1-70	BTS-4700	2nd. Video IF Amp. Grid
R26	82Ω	½	C-9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R27	1000Ω 20%	½	C-9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling
R28	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R29	8200Ω	½	C-9B1-73	BTS-8200	3rd. Video IF Amp. Grid
R30	82Ω	½	C-9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R31	1000Ω 20%	½	C-9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling
R32	4700Ω	½	C-9B1-70	BTS-4700	4th. Video IF Transformer Shunt
R33	120Ω	½	C-9B1-51	BTS-120	4th. Video IF Amp. Cathode
R34	68KΩ	1	C-9B3-84	BTA-68K	4th. Video IF Amp. Screen
R35	5600Ω	½	C-9B1-71	BTS-5600	4th. Video IF Amp. Plate Decoupling
R36	18KΩ	½	C-9B1-77	BTS-18K	5th. Video IF Transformer Shunt
R37	8200Ω	½	C-9B1-73	BTS-8200	Video Det. Diode Load
R38	33KΩ	½	C-9B1-80	BTS-33K	AGC Network
R39	68KΩ	½	C-9B1-84	BTS-68K	AGC Network
R40	2200Ω	½	C-9B1-66	BTS-2200	AGC Network
R41	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Voltage Divider
R42	1Meg	½	C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R43	6600Ω 20%	½	C-9B1-72	BTS-6800	Video Amp. Plate
R44	3300Ω	1	C-9B3-88	BTA-3300	Video Amp. Plate
R45	22KΩ 10%	2		BTB-22K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
R46	5600Ω	1	C-9B3-71	BTA-5600	Decoupling
R47	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Video Amp. Grid
R48	100Ω	½	C-9B1-50	BTC-100	Video Amp. Cathode
R49	4700Ω 20%	2	C-9B4-70	BTB-4700	Video Amp. Plate
R50	1000Ω	10	C-9C14-1099	1 3/4A-1000	Voltage Divider - Wire Wound
R51	1200Ω	10	C-9C14-1100	1 3/4A-1200	Voltage Divider - Wire Wound
R52	68KΩ	½	C-9B1-84	BTS-68K	Voltage Divider
R53	22KΩ	½	C-9B1-78	BTS-22K	Picture Tube Grid
R54	100KΩ	½	C-9B1-86	BTS-100K	Picture Tube Cathode
R55	1000Ω	½	C-9B1-62	BTS-1000	Acc' Anode
R56	220KΩ	½	C-9B1-90	BTS-220K	Sound IF Transformer Shunt
R57	120Ω	½	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R58	2200Ω	½	C-9B1-66	BTS-2200	Sound IF Amp. Decoupling
R59	22KΩ 20%	½	C-9B1-78	BTS-22K	Ratio Det. Diode Load
R60	27KΩ 20%	½		BTS-27K	De-emphasis - See Note 2
R61	47KΩ	½	C-9B1-82	BTS-47K	Tone Compensation - See Note 1
R62	10Meg 20%	½	C-9B1-37	BTS-10Meg	AF Amp. Grid
R63	220KΩ	½	C-9B1-90	BTS-220K	AF Amp. Plate
R64	470KΩ 20%	½	C-9B1-94	BTS-470K	Output Grid
R65	680Ω	1	C-9B3-80	BTA-680	Output Cathode
R66	30KΩ	½	C-9B1-74	BTS-10K	Isolation
R67	4.7Meg	½	C-9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R68	68KΩ	2	C-9B4-84	BTB-68K	Sync. Sep. Plate
R69	8200Ω	2	C-9B1-73	BTS-8200	Voltage Divider
R70	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Sync. Amp. Grid
R71	47KΩ 5%	1	C-9B3-82	BTA-47K-5%	Sync. Amp. Plate
R72	56KΩ	½	C-9B1-83	BTS-56K	Integrator
R73	1.5Meg	½	C-9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R74	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R75	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R76	3900Ω	½	C-9B1-69	BTS-3900	Vert. Peaking
R77	470KΩ 5%	1	C-9B1-94	BTS-470K-5%	Voltage Divider
R78	47KΩ	½	C-9B1-82	BTS-47K	Voltage Divider
R79	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Amp. Grid
R80	1000Ω	½	C-9B1-62	BTS-1000	Vert. Amp. Cathode
R81	2200Ω	½	C-9B1-66	BTS-2200	Dampling
R82	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Feedback Network - See Note 3
R83	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R84	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R85	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R86	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R87	68KΩ 20%	½	C-9B1-84	BTS-68K	Horiz. AFC Filter
R88	1500Ω	1	C-9B3-64	BTS-1500	Horiz. MV Cathode
R89	5600Ω	1	C-9B2-71	BTA-5600	Horiz. MV Plate
R90	100KΩ	½	C-9B1-86	BTS-100K	Horiz. MV Grid
R91	220KΩ	½	C-9B1-90	BTS-220K	Horiz. MV Plate
R92	220Ω	½	C-9B1-54	BTS-220	Parasitic Suppressor
R93	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Output Grid
R94	6800Ω	2	C-9B4-72	BTA-6800	Horiz. Output Screen
R95	680KΩ 20%	½	C-9B1-96	BTS-680K	Horiz. Feedback Network
R96	2.2Ω	2	C-9C1-1067		HV Rectifier Filament
R97	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R98	5600Ω	2	C-9B4-71	BTB-5600	Voltage Divider
R99	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R100	470KΩ 5%	1	C-9B1-94	BTS-470K-5%	Isolation

Note 1 Not used in all models.
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use 220KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.8A	720VCT ③ 250ADC	5VAC ③ 3A	6.3VAC ④ 1.5A SEC. 4 6.3VAC ⑤ 7A	C12A-18839	P-8159	P-3059	TP395 and F633 ①

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1100Ω	B12M-18241	A-8111 ②	A-3000 ②	T80-1 ②	Vert. Block Osc. Trans.
T3	870Ω	4Ω	C12M-18689-2		RV0-6 and MWC-1 ③		Horiz. Output Trans.
	Tap 82Ω	Tap .3Ω SEC. 2 5.3Ω SEC. 3 0Ω					
T4	990Ω	11.5	B12C-17302	A-8113	A-3036	T80-5 ①	Vert. Output Trans.
T5A	13.5Ω		B13M-13590	DT-1	MD-13		Horiz. Deflection Coils
B	81Ω						Vert. Deflection Coil.

① Drill one new mounting hole.
② Used for AGC winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	6.9KΩ	3Ω	480Ω	9Ω	B12C-16743	A-3878	A-2931	R0-13 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3Ω	C18A-18745 ④	6J6	6A15	④ Used in models 2D2043A, 2D247B
B	PM	3Ω	C18A-18865 ⑤	10J12	10A4A	⑤ Used in model 2D1091
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"				
B	9 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	② Drill one new mounting hole.
L2	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
L3	High Band Ant. Trans.	.1Ω	.1Ω	B-201-17143		
L4	Low Band Ant. Trans.	.1Ω	.1Ω			Part of L3
L5	RF Choke	.9Ω		A-16A-17128		
L6	RF Coil Pri.	.1Ω		B-13E-17140		High Band
L7	RF Coil Sec.	.1Ω		B-13E-17140		High Band
L8	RF Coil Pri.	.1Ω		B-13E-12046		Low Band
L9	RF Coil Sec.	.1Ω		B-13E-12046		Low Band
L10	Osc. Coil	.1Ω		B-13E-17140		High Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Conv. Plate Trap	11Ω		A-16A-18025		
L13	1st. Video IF	.4Ω		A-13M-18026		
L14	Fil. Choke	.3Ω		A-201-15609		
L15	2nd. Video IF	.2Ω		B-201-15612		
L16	3rd. Video IF	.2Ω		B-201-15612		
L17	4th. Video IF	.2Ω		B-201-15612		
L18	RF Choke	2.4Ω		A-201-15608		
L19	5th. Video IF	1.3Ω	1.3Ω	B-13B-18784		
L20	Fil. Choke	1.1Ω		A-16A-17937		
L21	Peaking	2.3Ω		A-16A-17961		
L22	4.5MC Trap	2.5Ω		A-201-18695		Includes C49
L23	Peaking	20Ω		A-16A-18685		
L24	Peaking	15Ω		A-16A-18685		
L25	Peaking	20Ω		A-16A-19486		
L26	1st. Sound IF	1Ω		B-13A-18783		
L27	Ratio Det. Trans.	4.2Ω	.2Ω	B-13M-17273		Tap. .6Ω
L28	Horiz. Osc.	60Ω		A-13D-16943		
L29	Horiz. Size	.2Ω		A-13M-18233		
L30	Horiz. Lin.	3.6Ω	Tap. 1Ω	A-13M-18961		

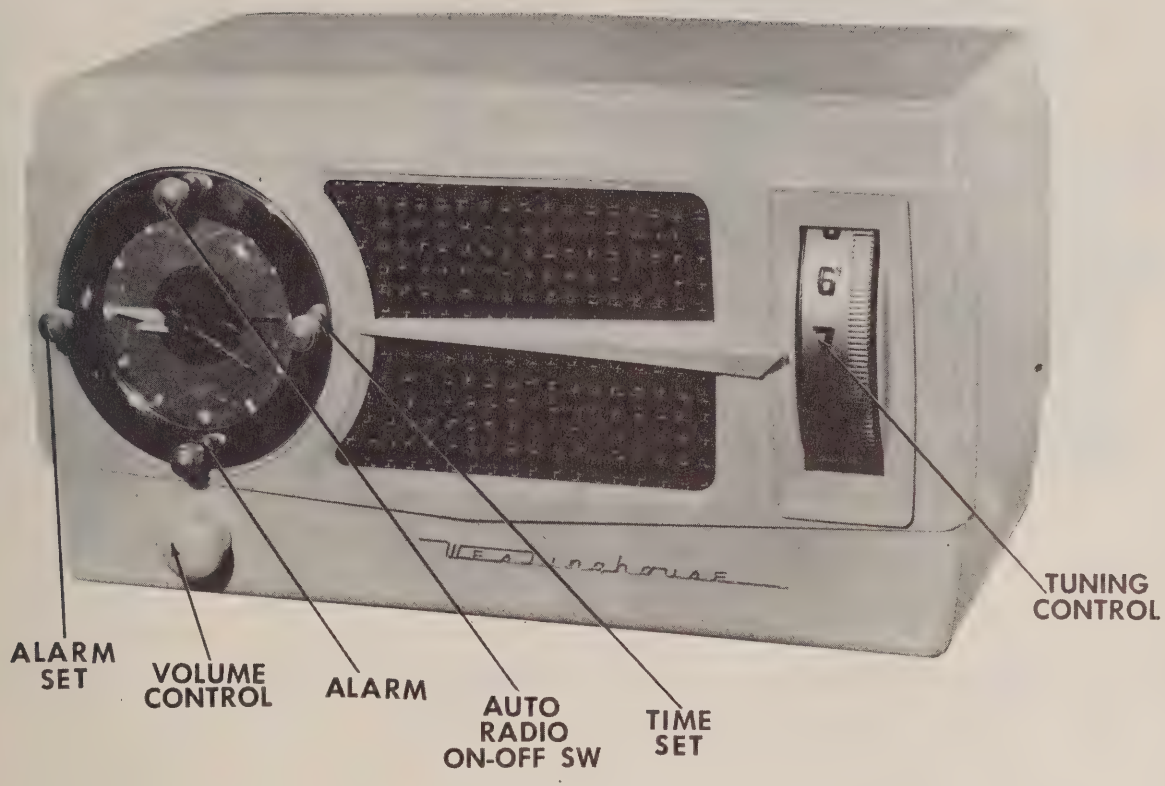
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			TRUETONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250	A46B-18362	A55F-18024	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	RF Tuner	C-211-18742	
M3	Switch	A-20F-12108	(Phono-TV)
M4	Focus Magnet	B-55P-18914	
M5	Ion Trap	B-16M-17982	
B2	Trimmer	A-8E-18508	80-480MMF. (Horiz. Drive)
	Knob	A-5B-18781-76	Tuner
	Knob	B-5B-17761-76	Volume
	Knob	B-5B-17762-76	Contrast
	Knob	B-5B-18382-36	Antenna
	Knob	B-5B-18244-76	3 Used Brightness, Vert. Hold, Horiz. Hold
	Pointer	A-2G-18788	

WESTINGHOUSE MODELS
H-355T5, H-356T5 (Ch. V-2157-5)



WESTINGHOUSE MODELS
H-355T5, H-356T5 (Ch. V-2157-5)

WESTINGHOUSE MODEL H356T5

TRADE NAME	Westinghouse Models H-355T5, H-356T5 (Ch. V-2157-5)
MANUFACTURER	Westinghouse Elect. Corp., Radio Div., Sunbury, Pa.
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock.
TUBES (FIVE)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 3 5W4 Rectifier
POWER SUPPLY	110-120 Volts AC- 60 Cycle RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1615KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to rear stator of tuning gang. Low side to B+	455KC (400∿mod)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1615KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	V-9991	PRS150/50-50		BRD5515A		TVA-2453	Filter (Red)
B	50	150							Filter (Orange)
C2	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter.
C3A	220		♦ V-10789-1	SI220	♦ PC-50	5W5T25	GP2K-221	5GA-T22	Diode RF Filter
B	.002			SI2000		1W5D2	GP2-333-202	5HK-D2	Audio Coupling
C	100			SI100		5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
D	.005			SI5000		1D5D5	GP2-333-502	5HK-D5	Audio Coupling
E	150			SI150		5W5T15	GP2K-151	5GA-T15	Audio Output Grid
C4	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C5	.047	400	V-10157-4473M	P488-047		PTE4S5		4TM-S47	Line Filter
C6	.05	400	RCP10W4503M	P488-05		PTE4S5		4TM-S5	Line Isolation

♦ Items C3A, C3B, C3C, C3D, C3E, R5, R6, R7 are combined in one unit.

CONTROLS

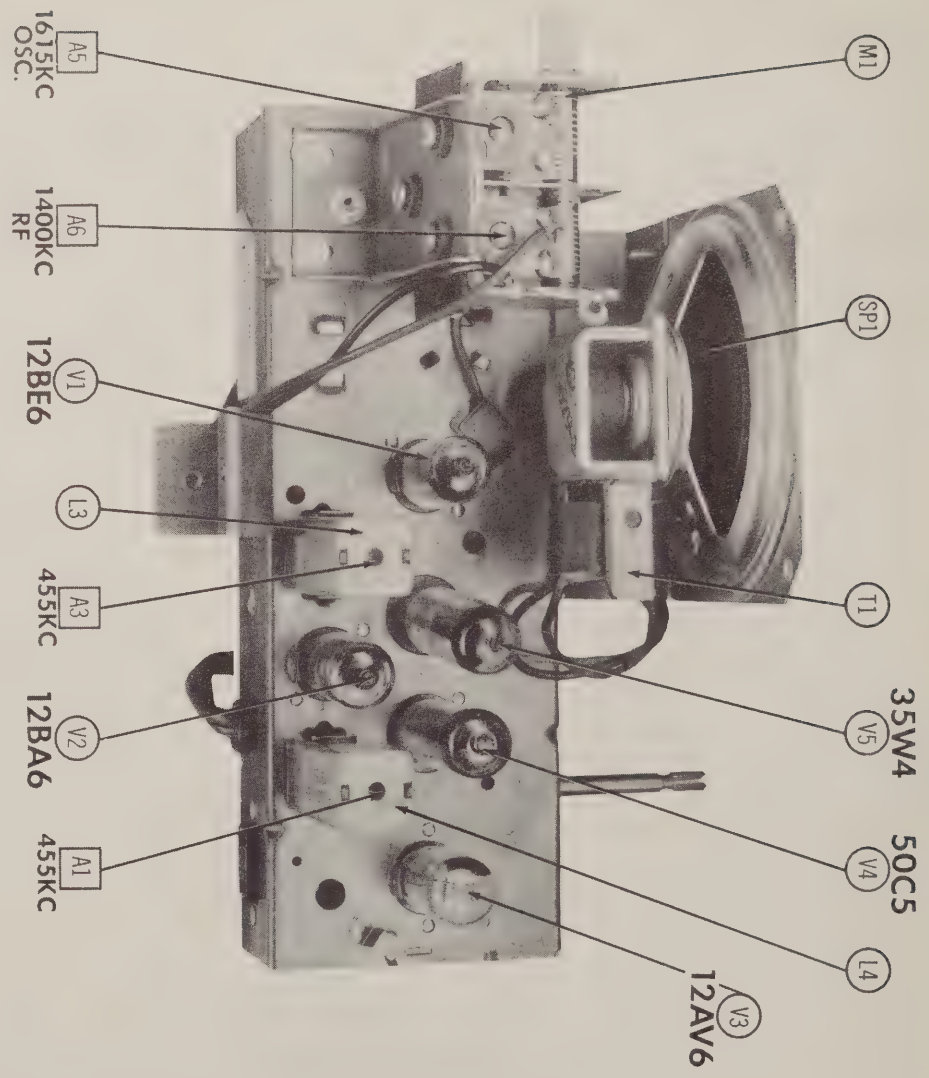
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V9993-5	Q13-133	AG-60-Z	BSK-60	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	RC20AE223M	BTS-22K	Mixer Grid
R3	3.3Meg	½	RC20AE335M	BTS-3.3Meg	AVC Network
R4	68Ω	½	RC20AE680M		1st IF Amp. Cathode
R5A	6.8Meg	½	♦ V-10789-1	BTS-6.8Meg	RF Amp. Grid
B	470KΩ	½		BTS-470K	AF Amp. Plate
C	470KΩ	½		BTS-470K	Output Grid
R6	150Ω	½	RC20AE151M	BTS-150	Output Cathode
R7	1.5KΩ	1	RC30AE152M	BTA-1.5K	Filter
R8	22Ω	1	RC30AE220M		Surge Limiter

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.2KΩ	4.1Ω	172Ω tapped @8Ω	.8Ω	Part of V-10079-2	A-3330①	A-3031	RO-3 ①	① Drill One New Mounting Hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	4.1Ω	V-10079-2	ST-113 Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

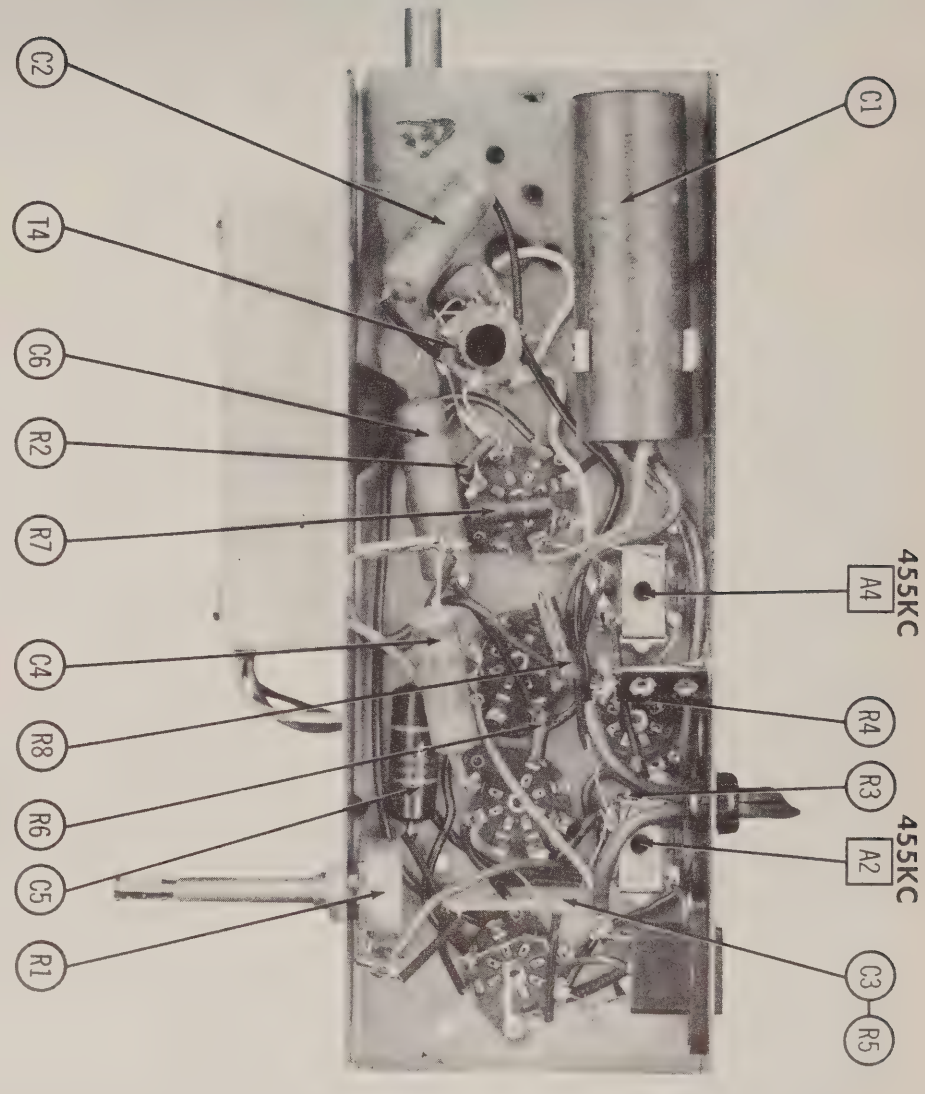
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Westinghouse PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	3-3Ω		V-10785			
L2	Osc. Coil	.9Ω	12Ω	V-9992			
L3	Input IF	17.5Ω	17.5Ω	V-9735-1	BC-352		
L4	Output IF	17.5	17.5Ω	V-9735-1	BC-353		

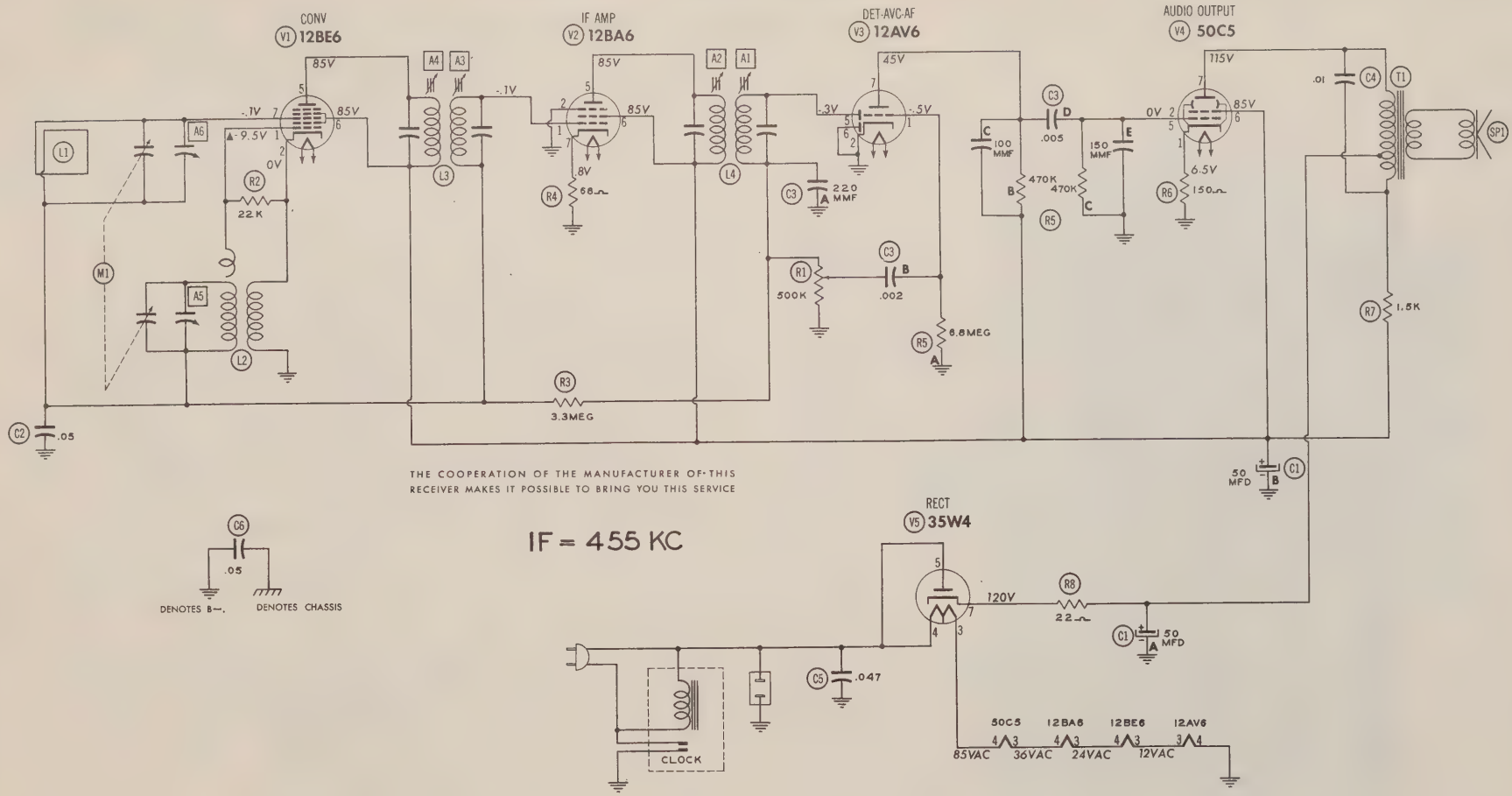
MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M1	2 gang Var. Cap.	V-10788-1	(22-398MMF, 16-147MMF)
	Cabinet	V-1248-1	Model H-355T5
	Cabinet	V-1248-2	Model H-356T5
	Dial	V-10783-1	
	Pointer	V-10774-2	
	Knob	V-10784-1	Volume - Model H-355T5
	Knob	V-10784-2	Volume - Model H-356T5

CHASSIS—BOTTOM VIEW



SET 161 FOLDER 11
DENVER, COLORADO
WESTINGHOUSE MODEL H-355T5
WESTINGHOUSE MODEL H-355T5



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1.5KΩ	†195Ω
V 5	35W4	†22Ω	0Ω	86Ω	121Ω	121Ω	103Ω	40KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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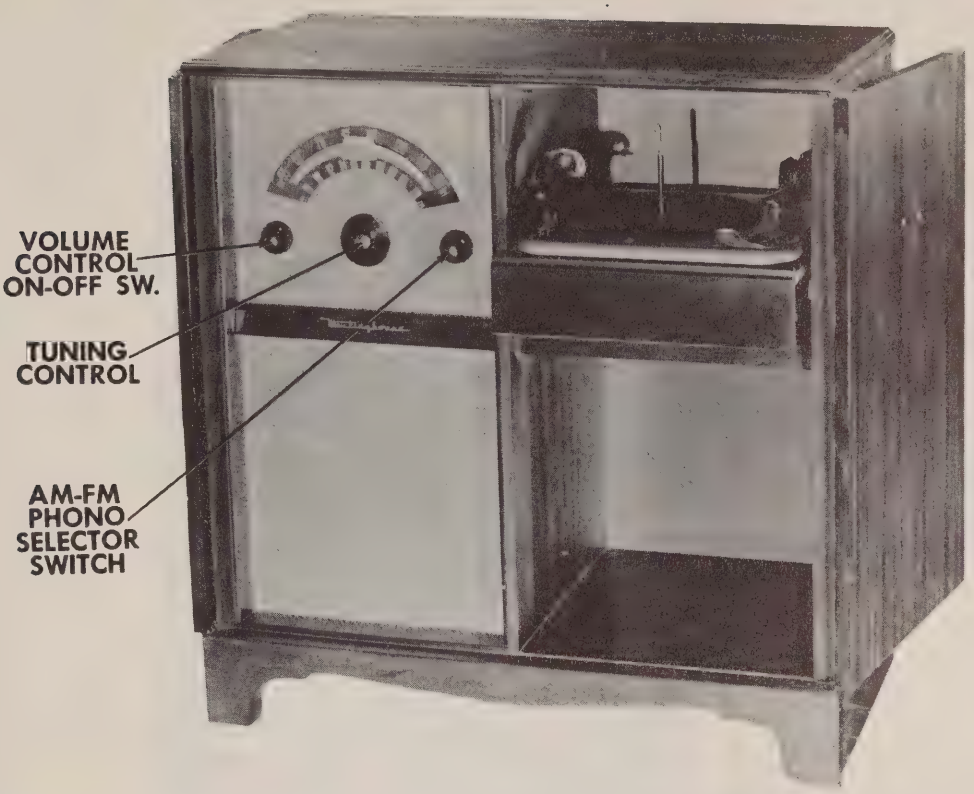
C. E. SUMMERS
3841 MEADE ST
DENVER, COLORADO

161-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE
MODEL H-357C10 (Ch. V-2180-5)

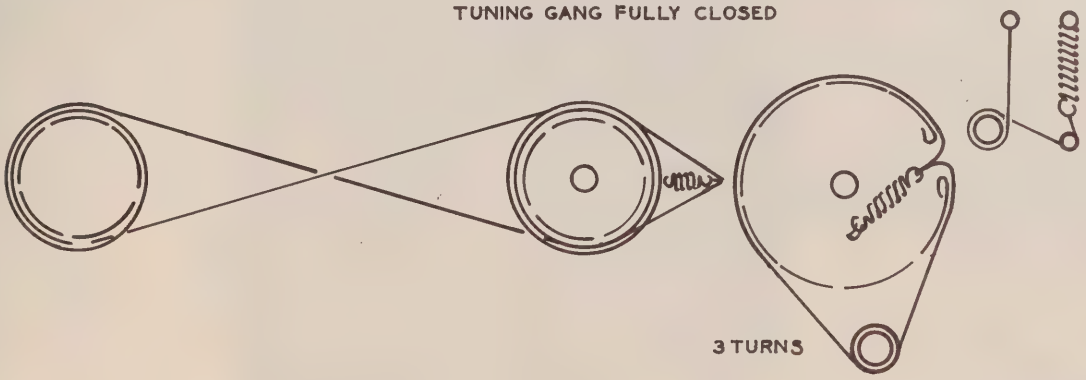


WESTINGHOUSE
MODEL H-357C10 (Ch. V-2180-5)

TRADE NAME	Westinghouse Model H-357C10 (Ch. V-2180-5)
MANUFACTURER	Westinghouse Elect. Corp., TV-Radio Div., Sunbury, Pa.
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver
TUBES (TEN)	Types 6BJ6 FM RF Amp., 12AT7 Conv., 6BA6 1st FM-AM IF Amp., 6BA6 2nd FM IF Amp. 6AL5 Ratio Det., 6AV6 AM Det-AVC-AF Amp., 6C4 Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .7Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1615KC — FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT 700F 33/45 SEE PHOTOFACT SET 75 FOLDER 11 OR RECORD CHANGER MANUAL CM-3.

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

PROPERTY OF
L. F. BLANKEN
3924 M
DENVE

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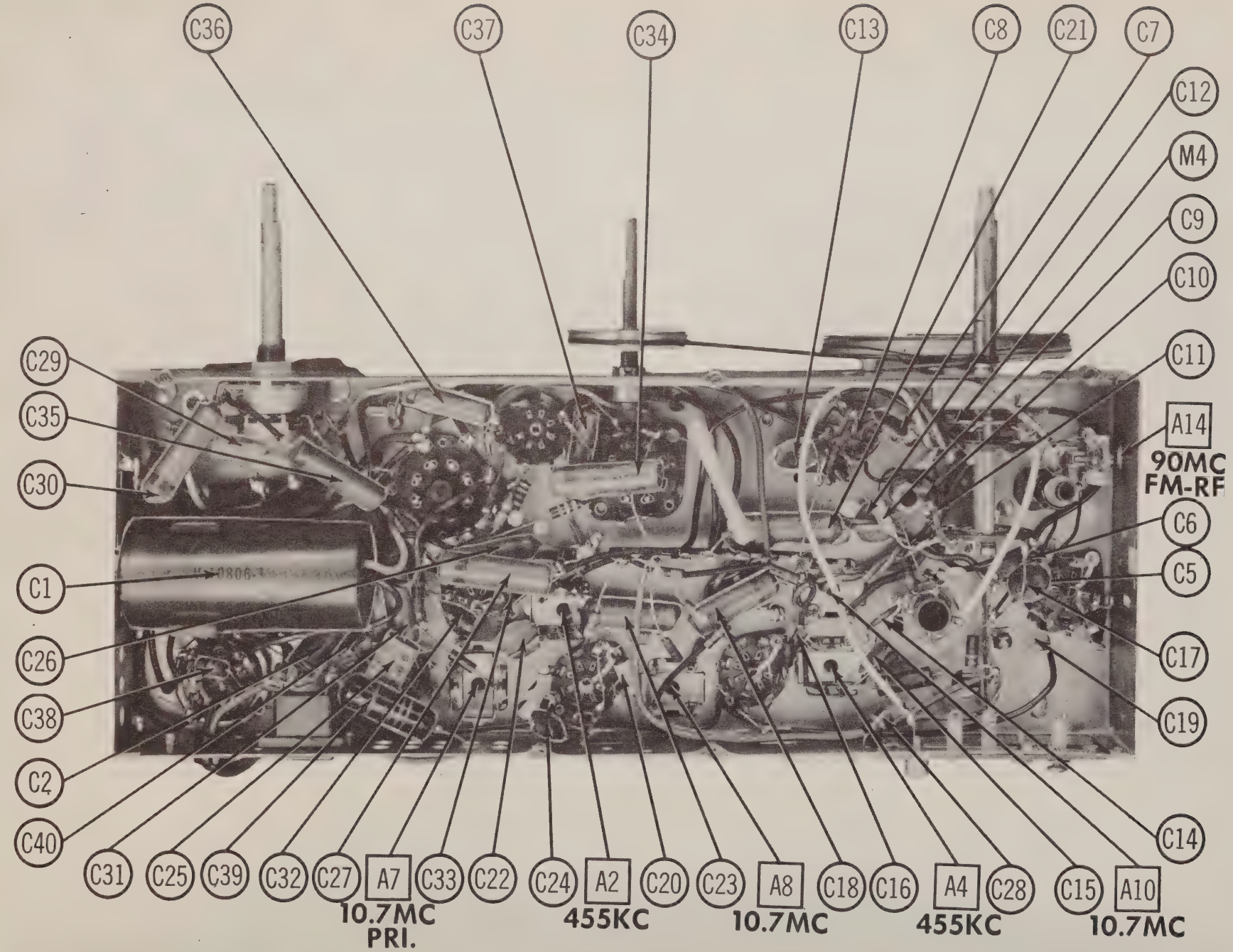
C36
C37
C34
C13
C8
C21
C7
C12
M4
C9
C10
C11
A14
90MC
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C5
C17
C19
C14
C29
C35
C30
C1
C26
C38
C2
C40
C31
C25
C39
C32
C27
A7
10.7MC
PRI.
C33
C22
C24
A2
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C23
A8
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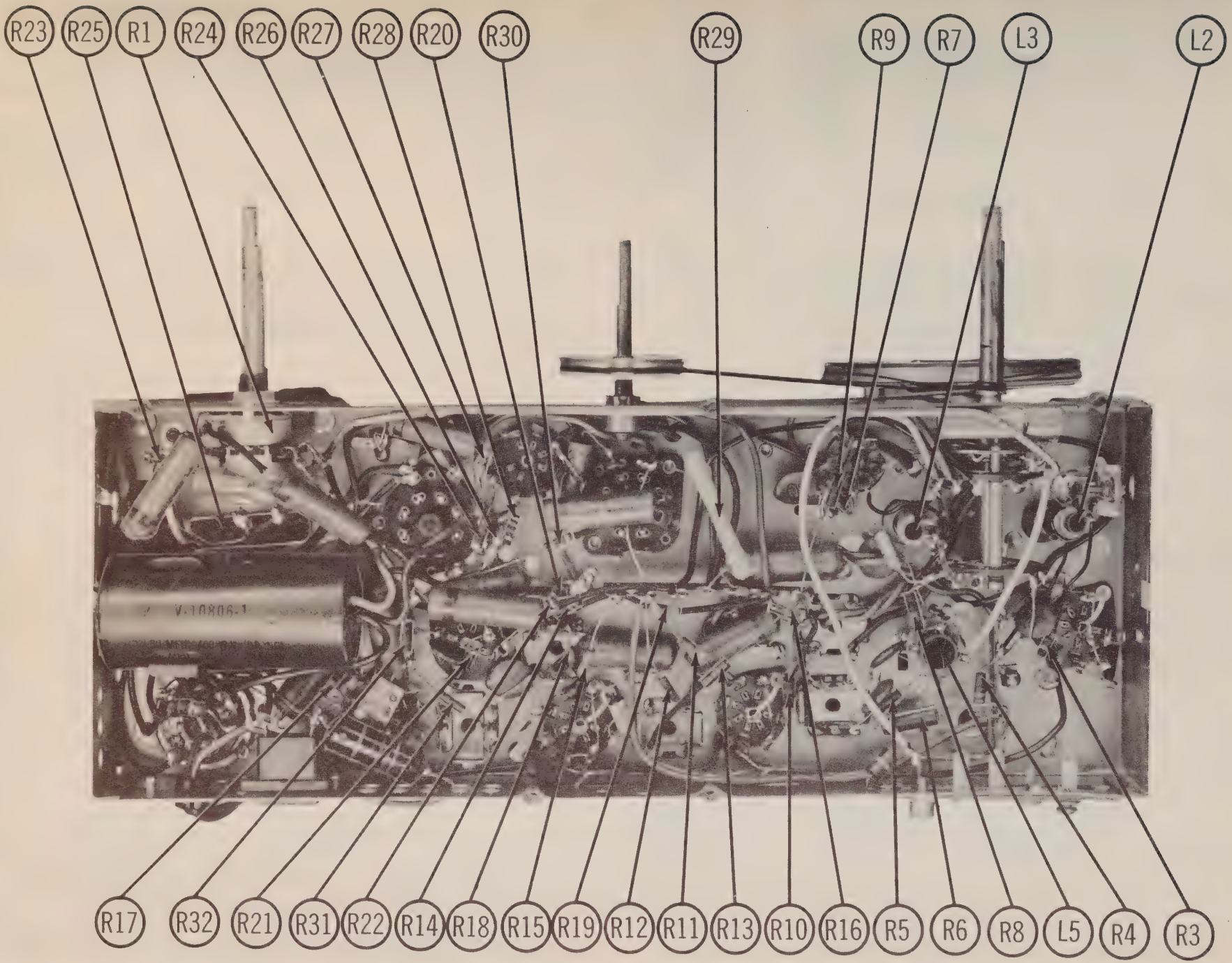
C18
C16
A4
455KC
C28
C15
A10
10.7MC


R23
R25
R1
R24
R26
R27
R28
R20
R30
R29
R9
R7
L3
L2
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R32
R21
R31
R22
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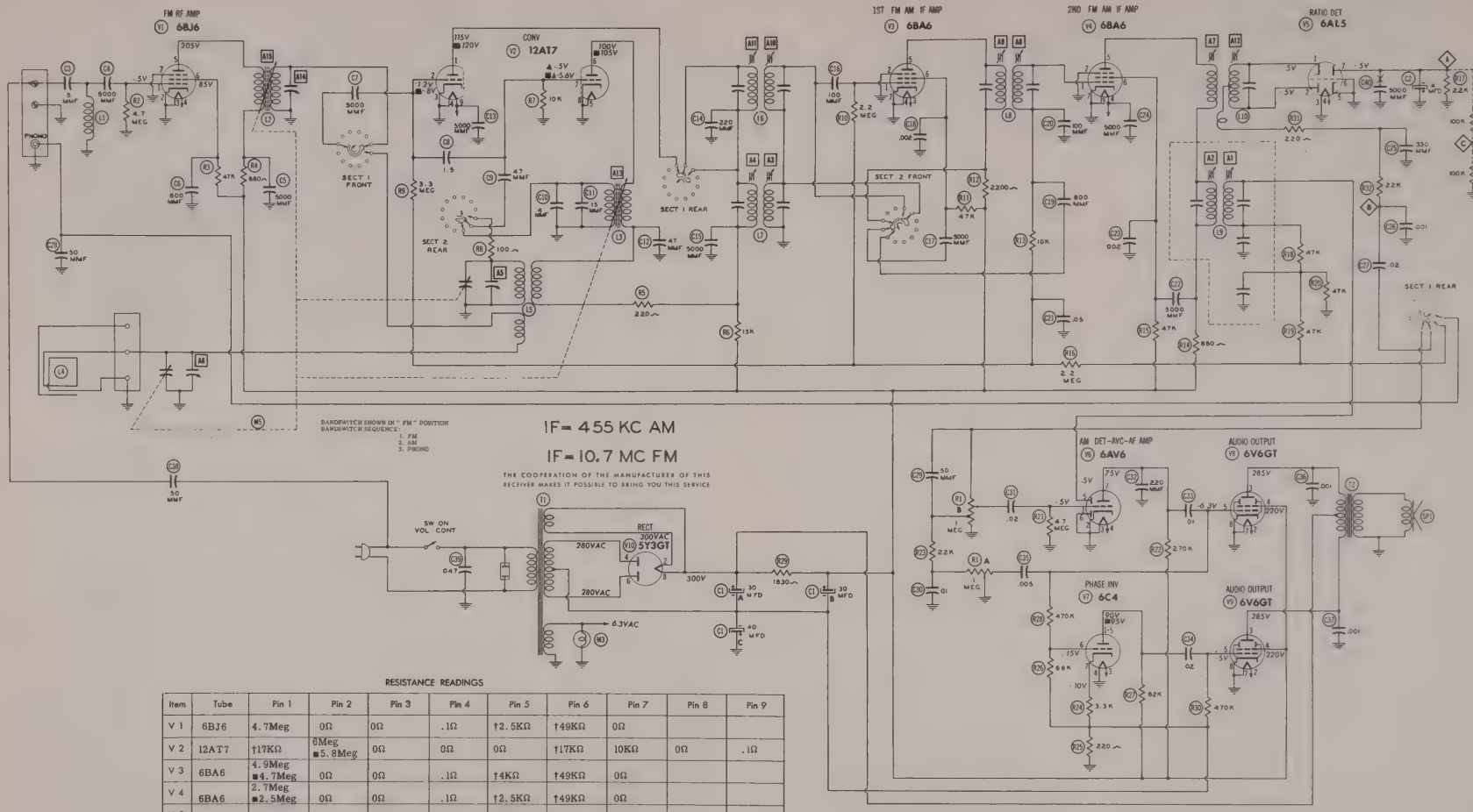
R8
L5
R4
R3



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	4.7Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†49KΩ	0Ω		
V 2	12AT7	†17KΩ	6Meg ■5.8Meg	0Ω	0Ω	0Ω	†17KΩ	10KΩ	0Ω	.1Ω
V 3	6BA6	4.9Meg ■4.7Meg	0Ω	0Ω	.1Ω	†4KΩ	†49KΩ	0Ω		
V 4	6BA6	2.7Meg ■2.5Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†49KΩ	0Ω		
V 5	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	22KΩ		
V 6	6AV6	4.7Meg	0Ω	0Ω	.1Ω	510KΩ	0Ω	†270KΩ		
V 7	6C4	†84KΩ	INF	.1Ω	0Ω	†84KΩ	68KΩ	3.5KΩ		
V 8	6V6GT	0Ω	.1Ω	†300Ω	†1.8KΩ	535KΩ	0Ω	0Ω	0Ω	
V 9	6V6GT	0Ω	.1Ω	†300Ω	†1.8KΩ	470KΩ	INF	0Ω	0Ω	
V 10	5Y3GT	INF	80KΩ	INF	300Ω	INF	295Ω	INF	80KΩ	

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† TAKEN FROM PIN 8 OF V10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12AT7	12AT7	9A	
V3	1st FM AM IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	5BT	
V6	AM Det. -AVC- AF Amplifier	6AV6	6AV6	7BT	
V7	Phase Inverter	6C4	6C4	6BG	
V8	Audio Output	6V6GT	6V6GT	7AC	
V9	Audio Output	6V6GT	6V6GT	7AC	
V10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

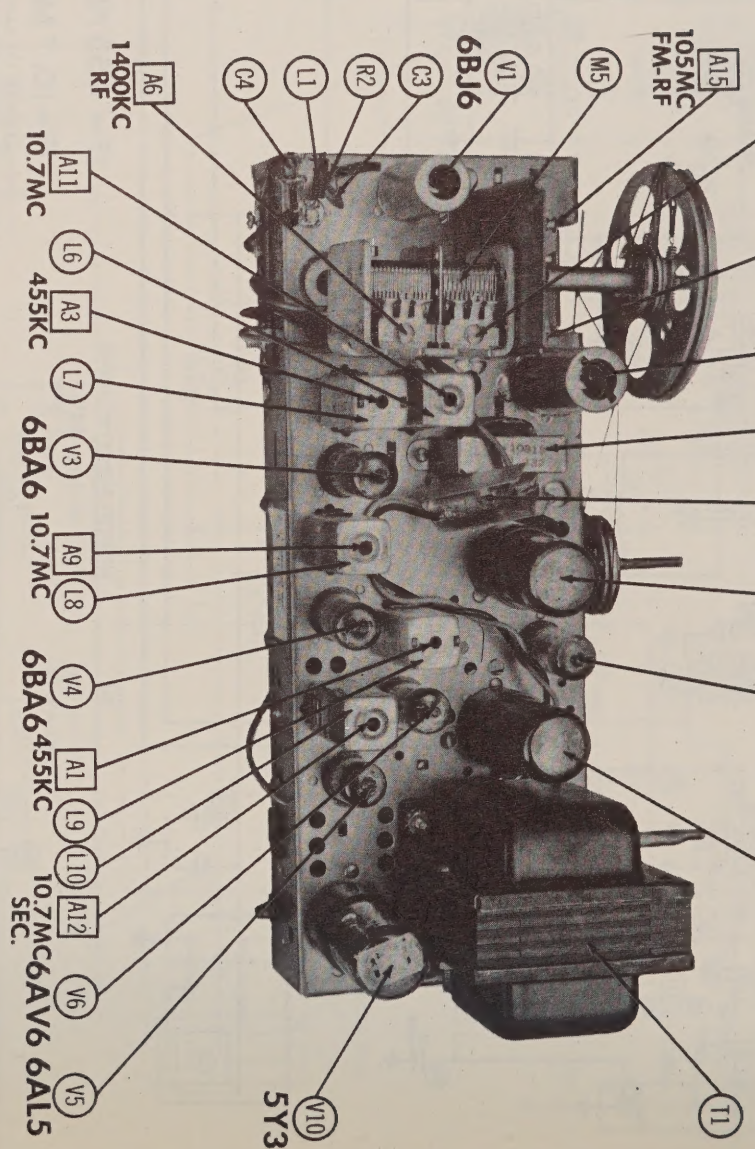
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	400	V-10806-1			EDL22245C		TVA-2735	Filter (Red)
B	30	400						TVA-1206	Filter (Orange)
C	40	25							Bias Filter (Yellow)
C2	4	50	V-4637	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C3	5		V-9926-3	SI5NP0	TCZ-4.7		NP0K-050		FM RF Coupling
C4	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM RF Coupling
C5	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM RF Amp. Plate Dec.
C6	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	5HK-D1	FM RF Amp. Screen
C7	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Coupling
C8	1.5		V-5658-9	SI1.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C9	47		R2CC30RK470K				N220K-470		Osc. Grid Cap.
C10	4		R2CC20UJ040D				NP0K-040		Fixed Trimmer
C11	15						N470K-150		Fixed Trimmer
C12	47		V-10710-1				N220K-470		Osc. Plate Bypass
C13	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Conv. Fil. Bypass
C14	220		V-10710-2	SI220	D6-221		GP2K-221	5GA-T22	Mixer Plate Dec.
C15	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Mixer Plate Dec.
C16	100		R4CC21YY101M	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C17	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st IF Amp. Plate Dec.
C18	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	1st IF Amp. Screen
C19	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	5HK-D1	AM IF Coupling
C20	100		R4CC21YY101M	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	AVC Filter
C21	.05	200	RCP10W2503M	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C22	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd IF Amp. Plate Dec.
C23	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	2nd IF Amp. Screen
C24	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd IF Amp. Fil.
C25	330	500	RCM30A331M	1468-00035	D6-331		GP2K-331	1FM-335	Diode Load Cap.
C26	.001	600	RCP10W6102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C27	.02	200	RCP10W2203M	P488-02	DF-203	PJ2S2		2TM-S2	Audio Coupling
C28	50		V-5658-10	SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	Phono Tone Comp.
C29	50		V-5658-10	SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	Tone Comp.
C30	.01	200	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S2	Tone Comp.
C31	.02	200	RCP10W2203M	P488-02	DF-203	PJ2S2		2TM-S2	Audio Coupling
C32	220		V-10710-2	SI220	D6-221		GP2K-221	5GA-T22	AF Amp. Plate Bypass
C33	.01	400	RCP10W2103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C34	.02	200	RCP10W4203M	P488-02	DF-203	PJ2S2		2TM-S2	Audio Coupling
C35	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C36	.001	600	RCP10W6102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Audio Output Plate
C37	.001	600	RCP10W6102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Audio Output Plate
C38	50		V-5658-10	SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	FM Line Ant. Isolation
C39	.047	400	V-10157-4473M	P488-047		PTE4S47		4TM-S47	Line Filter
C40	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass *

* Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg		V-10330-2	Concentrikit B11-137 *		SBBT-687-S	Tone Control - Panel
B	1Meg		Not Req.	B13-137X *			Volume Control -Tapped @ 150KΩ-Rear
C	Shaft End		Not Req.	E202 *			Attach per instructions in "Concentrikit"
D	Swtich		Not Req.	76-1*			Attach per instructions in "Concentrikit"

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	
R2	4.7Meg	½	RC20AE475M		FM RF Amp. Grid
R3	47KΩ	½	RC20AE473M	BTS-47K	FM RF Amp. Screen
R4	680Ω	½	RC20AE681M	BTS-680	FM RF Amp. Plate Decoupling
R5	220Ω	½	RC20AE221M	BTS-220	Osc. Plate
R6	15KΩ	1	RC30AE153K		Decoupling
R7	10KΩ	½	RC20AE103M		Osc. Grid
R8	100Ω	½	RC20AE101M		Parasitic Suppressor
R9	3.3Meg	½	RC20AE335M	BTS-3.3Meg	AVC Network
R10	2.2Meg	½	RC20AE225M		1st FM AM IF Amp. Grid
R11	47KΩ	½	RC20AE473M	BTS-47K	1st FM AM IF Amp. Screen
R12	2200Ω	½	RC20AE222M	BTS-2200	1st FM AM IF Amp. Plate Decoupling
R13	10KΩ	½	RC20AE103M		2nd FM IF Amp. Grid
R14	680Ω	½	RC20AE681M	BTS-680	2nd FM IF Amp. Plate Decoupling
R15	47KΩ	½	RC20AE473M	BTS-47K	2nd FM IF Amp. Screen
R16	2.2Meg	½	RC20AE225M	BTS-2.2Meg	AVC Network
R17	22KΩ	½	RC20AE223K	BTS-22K	Ratio Det. Diode Load
R18	47KΩ	½	RC20AE473M	BTS-47K	Diode Filter
R19	47KΩ	½	RC20AE473M	BTS-47K	Diode Filter
R20	470KΩ	½	RC20AE474K	BTS-470K	Diode Load
R21	4.7Meg	½	RC20AE475M	BTS-4.7Meg	AF Amp. Grid
R22	270KΩ	½	RC20AE274K	BTS-270K	AF Amp. Plate
R23	22KΩ	½	RC20AE223M	BTS-22K	Tone Compensation
R24	3300Ω	½	RC20AE332J	BTS-3300	Phase Inv Cathode
R25	220Ω	2	RC40AE221K	BTB-220	Phase Inv Cathode
R26	68KΩ	½	RC20AE683K	BTS-68K	Phase Inv Grid
R27	82KΩ	½	RC20AE823K	BTS-82K	Phase Inv Plate
R28	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R29	1830Ω	5	V-6984-16		Filter Wire Wound
R30	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R31	220Ω	½	RC20AE221M		Balancing
R32	22KΩ	½	RC20AE223M		De-emphasis

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .7A	600VCT .105ADC	5VAC @ 2A	6.3VAC @ 2.5A	V-6667 V-10811 ②	P-6013 ①	PM8410 ①	PV-120

① Mount vertically with universal mounting brackets. Add series resistor to reduce plate voltage.
② Alternate transformer.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6KΩ CT	3.4Ω	600Ω CT	.65Ω	V-10813	A-3850	A-2901 ③	RO-303 ③	③ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Westinghouse PART No.	VIKING PART No.	QUAM PART No.	
SP1A	P.M.	3.4Ω	V-9770-1	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP1B	10 in.	1 in.				

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PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Westinghouse PART No.	MERIT PART No.	
L1	FM Ant. Coil	0Ω		V-10644-1		
L2	FM RF Coil	0Ω	0Ω	V-10642-1		
L3	FM Osc. Coil	0Ω	0Ω	V-10643-1		
L4	AM Loop Ant.	1.2Ω		V-10808-1		
L5	AM Osc. Coil	3.7Ω	8.8Ω	V-10944-1		Tertiary Winding 1.7Ω
L6	1st FM IF	0Ω	0Ω	V-9688	FM-254	
L7	1st AM IF	4.4Ω	11Ω	V-10619		Tertiary Winding 11Ω
L8	2nd FM IF	1.5Ω	1.5Ω	V-9642	FM-254	
L9	2nd AM IF	15Ω	14.8Ω	V-10350-1	BC-352	
L10	Ratio Det. Trans.	2.6Ω	.3Ω	V-9828	FM-255	Tap @ .4Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	Westinghouse PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-30AGA	JP-312	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Westinghouse PART No.		
M3	Bayonet	7.5	.2	White			Type #51

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Swtich	V-10810-1	Function Selector
M5	2 Gang Var. Cap.	V-10662-1	(22-489MMF, 25-177MMF) AM Sections
A14	Trimmer	V-10640-1	FM RF Adj.
	Cabinet	V-1230-1	
	Dial	V-10308-1	
	Pointer	V-10310-1	
	Knob	V-9104-9	Tuning (Rear)
	Knob	V-10408-5	Band Switch
	Knob	V-10408-2	Volume - On/Off
	Knob	V-9104-10	Tone (Rear)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400∿mod.)	AM (center)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1615KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune for max. output.	"	A6	Rock tuning gang while adjusting A6 for max. deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid), of 6BA6, (V3). Low side to chassis.	10.7MC (unmod)	FM (CCW)	Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A7, A8 A9.	Adjust for maximum deflection.
5.	"	High side to pin 2, (grid), of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid), of 6BA6, (V3). Low side to chassis.	10.7MC (450KC Swp)	FM (CCW)	Point of non-interference.	Vert. Amp. to point Ⓐ. Low side to chassis.	A7, A8, A9	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
5.	"	High side to pin 2, (grid), of 12AT7, (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistor	High side thru 300Ω to ungrounded ant. terminal. Low side to chassis.	98MC (unmod)	FM	98MC	DC probe to point Ⓐ. Common to chassis.	A13, A14	Adjust for maximum deflection.
8.	"	"	105MC	"	Tune for max. deflection.	"	A15	"
9.	"	"	90MC	"	"	"	A14	Rock tuning gang while adjusting for max. deflection. Repeat steps 7, 8, and 9 until no further improvement can be made.

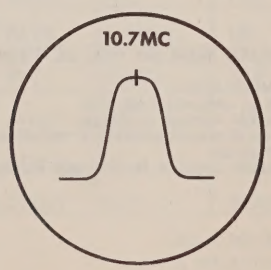

FIG. 1

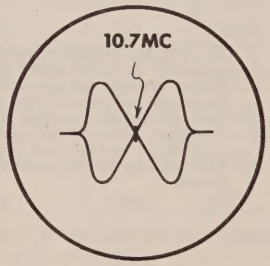

FIG. 2

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